BIDDING DOCUMENTS

FOR THE

BUENA PARK SCHOOL DISTRICT

FOR

MULTI – PURPOSE ROOM (MPR) MODERNIZATION PROJECTS

AT

CHARLES G. EMERY ELEMENTARY SCHOOL

8600 Somerset Street

Buena Park, CA 90621

ARTHUR F. COREY ELEMENTARY SCHOOL

7351 Holder Street

Buena Park, CA 90620

CARL E. GILBERT ELEMENTARY SCHOOL

7255 8th Street

Buena Park, CA 90621

JAMES A. WHITAKER ELEMENTARY SCHOOL

8401 Montana Avenue

Buena Park, CA 90621

Bid No. 14-2022

BUENA PARK SCHOOL DISTRICT

6885 Orangethorpe Ave, Buena Park, CA 90620 Address (714) 522-8412

APRIL 2022

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NOTICE INVITING BIDS 1

INSTRUCTIONS TO BIDDERS 5

CHECKLIST OF MANDATORY BID FORMS 13

DESIGNATION OF SUBCONTRACTORS 14

DESIGNATION OF SUBCONTRACTORS FORM 15

BID FORM 18

CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION FORM 23

NON-COLLUSION DECLARATION 24

BID GUARANTEE FORM 25

BID BOND FORM 26

REQUEST FOR SUBSTITUTION 29

ACKNOWLEDGMENT OF BIDDING PRACTICES REGARDING INDEMNITY FORM 31

DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) PARTICIPATION STATEMENT 32

CONTRACTOR'S CERTIFICATE REGARDING DRUG-FREE WORKPLACE 33

CONTRACTOR'S CERTIFICATE REGARDING ALCOHOLIC BEVERAGE AND TOBACCO-FREE CAMPUS POLICY 34

AGREEMENT FORM 36

PAYMENT BOND 42

PERFORMANCE BOND 45

GUARANTEE 49

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION 50

INSURANCE DOCUMENTS & ENDORSEMENTS 53

DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) CONTRACTOR CLOSE-OUT STATEMENT 55

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS 56

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS 57

ARTICLE 1 DEFINITIONS 58

1.1 BASIC DEFINITIONS 58
1.2 EXECUTION, CORRELATION AND INTENT 64
1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS 68

ARTICLE 2 DISTRICT 69

2.1 INFORMATION AND SERVICES REQUIRED OF THE DISTRICT 69
2.2 DISTRICT'S RIGHT TO CARRY OUT THE WORK DUE TO PARTIAL DEFAULT IN A SPECIFIC SEGREGATED AREA OF WORK (48 HOUR NOTICE TO CURE AND CORRECT) 72

ARTICLE 3 THE CONTRACTOR 74

3.1 SUPERVISION AND CONSTRUCTION PROCEDURES 74
3.2 SUPERVISION 75
3.3 LABOR AND MATERIALS 76
3.4 WARRANTY 79
3.5 TAXES 80
3.6 PERMITS, FEES AND NOTICES 80
3.7 SUBMITTALS REQUIRED AT THE COMMENCEMENT OF THE PROJECT 81
3.8 DOCUMENTS, SAMPLES, AND COMPUTER AT THE SITE 82
3.9 SUBMITTALS INCLUDING SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES 83
3.10 SUBSTITUTIONS 89
3.11 INTEGRATION OF WORK 91
3.12 CLEANING UP 91
3.13 ACCESS TO WORK 93
3.14 ROYALTIES AND PATENTS 93
3.15 INDEMNIFICATION 94
3.16 SUBMISSION OF DAILY REPORTS 94
3.17 AS-BUILT DRAWINGS AND ANNOTATED SPECIFICATIONS 95
3.18 EQUIPMENT MANUALS 96
3.19 DIR REGISTRATION 96

ARTICLE 4 ADMINISTRATION OF THE CONTRACT AND CLAIMS 97

4.1 ARCHITECT 97

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT 97
4.3 PROJECT INSPECTOR 99
4.4 STOP WORK ORDER 101
4.5 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE DISTRICT FOR PROFESSIONAL SERVICES 101
4.6 DISPUTES AND CLAIMS 102

ARTICLE 5 SUBCONTRACTORS 112

5.1 DEFINITIONS 112

ARTICLE 6 CONSTRUCTION BY DISTRICT OR BY SEPARATE CONTRACTORS 114

6.1 DISTRICT'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS 114
6.2 CONSTRUCTIVE OWNERSHIP OF PROJECT SITE AND MATERIAL 116
6.3 DISTRICT'S RIGHT TO CLEAN UP 116

ARTICLE 7 CHANGES IN THE WORK 117

7.1 CHANGES 117
7.2 CHANGE ORDERS ("CO") 118
7.3 CONSTRUCTION CHANGE DOCUMENT (CCD Category A, and CCD Category B) and IMMEDIATE CHANGE DIRECTIVE (ICD) 118
7.4 REQUEST FOR INFORMATION ("RFI") 120
7.5 REQUEST FOR PROPOSAL ("RFP") 120
7.6 CHANGE ORDER REQUEST ("COR") 121
7.7 COST OF CHANGE ORDERS 121

ARTICLE 8 TIME AND SCHEDULE 128

8.1 DEFINITIONS 128
8.2 HOURS OF WORK 130
8.3 PROGRESS AND COMPLETION 130
8.4 EXTENSIONS OF TIME - LIQUIDATED DAMAGES 134

ARTICLE 9 PAYMENTS AND COMPLETION 138

9.1 CONTRACT SUM 138
9.2 COST BREAKDOWN 138
9.3 PROGRESS PAYMENTS 139
9.4 APPLICATIONS FOR PROGRESS PAYMENTS 141
9.5 STOP NOTICE CLAIMS AND WARRANTY OF TITLE 143
9.6 DECISIONS TO WITHHOLD PAYMENT 144
9.7 NONCONFORMING WORK 146
9.8 SUBCONTRACTOR PAYMENTS 146
9.9 COMPLETION OF THE WORK 147
9.10 PARTIAL OCCUPANCY OR USE 151
9.11 COMPLETION AND FINAL PAYMENT 152
9.12 SUBSTITUTION OF SECURITIES 155

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY 156

10.1 SAFETY PRECAUTIONS AND PROGRAMS 156
10.2 SAFETY OF PERSONS AND PROPERTY 158
10.3 EMERGENCIES 161
10.4 HAZARDOUS MATERIALS 161

ARTICLE 11 INSURANCE AND BONDS 163

11.1 CONTRACTOR'S LIABILITY INSURANCE 163
11.2 WORKERS' COMPENSATION INSURANCE 165
11.3 BUILDER'S RISK/ "ALL RISK" INSURANCE 165
11.4 FIRE INSURANCE 166
11.5 AUTOMOBILE LIABILITY 166
11.6 OTHER INSURANCE 166
11.7 PROOF OF INSURANCE 167
11.8 COMPLIANCE 167
11.9 WAIVER OF SUBROGATION 167
11.10 PERFORMANCE AND PAYMENT BONDS 168

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK 169

12.1 COMPLIANCE WITH TITLE 24 INSTALLATION REQUIREMENTS 169
12.2 SPECIAL NOTICE OF AMERICAN'S WITH DISABILITIES ACT 169
12.3 UNCOVERING OF WORK 170
12.4 CORRECTION OF WORK 170

ARTICLE 13 MISCELLANEOUS PROVISIONS 172

13.1 GOVERNING LAW 172
13.2 SUCCESSORS AND ASSIGNS 172
13.3 WRITTEN NOTICE 172
13.4 RIGHTS AND REMEDIES 172
13.5 TESTS AND INSPECTIONS 172
13.6 TRENCH EXCAVATION 173
13.7 WAGE RATES, TRAVEL, AND SUBSISTENCE 174
13.8 RECORDS OF WAGES PAID 176
13.9 APPRENTICES 178
13.10 ASSIGNMENT OF ANTITRUST CLAIMS 179
13.11 STATE AND DISTRICT CONDUCTED AUDITS 180
13.12 STORM WATER POLLUTION PREVENTION 181

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT 186

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE 186
14.2 TERMINATION BY THE DISTRICT FOR CAUSE 186
14.3 TERMINATION OF CONTRACT BY DISTRICT (CONTRACTOR NOT AT FAULT) 188
14.4 REMEDIES OTHER THAN TERMINATION 188

ARTICLE 15 DEBARMENT 190

15.1 DEBARMENT MEANS THERE HAS BEEN A FINDING THAT THE CONTRACTOR IS NOT RESPONSIBLE. 190
15.2 BOARD FINDING 190
15.3 HEARING AND PRESENTATION OF EVIDENCE 190

SUPPLEMENTARY GENERAL CONDITIONS……....193
SPECIAL CONDITIONS……. 196
EXHIBIT A (Scope of Work)……... ATTACHED
SITE & LOGISTICS PLAN/SPECIFICATIONS …….…….. ATTACHED

NOTICE INVITING BIDS

BUENA PARK SCHOOL DISTRICT

NOTICE IS HEREBY GIVEN that the Buena Park School District, acting by and through its Governing Board, hereinafter referred to as "District", will receive prior to **2:30 PM on the 19th day of April, 2022** sealed bids for the award of a Contract for the following:

BID NO. 14-2022

BUENA PARK SCHOOL DISTRICT – Multi – Purpose Room (MPR) Modernization Projects

All bids shall be made and presented only on the forms presented by the District. Bids shall be received in the Office of the Buena Park School District at **6885 Orangethorpe Ave Buena Park, California 90620** and shall be opened and publicly read aloud at the above state time and place. Any bids received after the time specified above or after any extensions due to material changes shall be returned unopened.

The Contract Time is 71 calendar days.

CONTRACTOR should consult the General Conditions, Supplementary Conditions, and General Requirements regarding Milestones and Liquidated Damages.

Prequalification of Bidders – Prequalification is required.

Additive/ Deductive Bid Alternates (See Section 13 of Instruction to Bidders)

If the District has included additive/ deductive alternates which require all bidders to price as part of their bid, the District will utilize the following method to determine the lowest bidder in accordance with Public Contract Code section 20103.8:

- ❑ The lowest bid shall be the lowest bid price on the base contract without consideration of the prices on the additive or deductive items.
- ❑ The lowest bid shall be the lowest total of the bid prices on the base contract and the following additive or deductive items:

  No alternates
- ❑ The lowest bid shall be the lowest total of the bid prices on the base contract and the following additive or deductive items taken in order as listed below depending upon the available funds for this Project which is estimated at:
- ❑ The lowest bid shall be determined in a manner that prevents any information that would identify any of the bidders from being revealed to the District before the ranking of all bidders from lowest to highest has been determined. The procedures the District will utilize to conceal the identity of any of the bidders will be as follows:

**Note: Pursuant to Public Contract Code section 20103.8, the selection process selected does not preclude the District from using any of the additive or deductive alternates from the Contract after the lowest responsible responsive bidder has been determined.

Miscellaneous Information

Bids shall be received in the place identified above, and shall be opened and publicly read aloud at the above-stated time and place.

The bid documents are available free of charge via the Buena Park School District's website at http://www.bpsd.us/requests/ or through Procore by emailing Ms. Karla Reveles kreveles@telacu.com.

There will be a mandatory Pre-Bid Conference on Monday, April 4th, 2021 starting at 9:00 AM at Emery Elementary School, 8600 Somerset Street, Buena Park, CA 90621.

Pre-bid clarifications (RFIs) are to be submitted prior to 3:00 PM on Thursday, April 7th, 2022 through Procore.

Each bidder shall be a licensed contractor pursuant to the California Business and Professions Code, and be licensed to perform the work called for in the Contract Documents. The successful bidder must possess a valid and active Class B-I License at the time of bid and throughout the duration of this Contract. The Contractor's California State License number shall be clearly stated on the bidder's proposal.

Subcontractors shall be licensed pursuant to California law for the trades necessary to perform the Work called for in the Contract Documents.

Each bid must strictly conform with and be responsive to the Contract Documents as defined in the General Conditions.

The District reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding.

Each bidder shall submit with its bid — on the form furnished with the Contract Documents — a list of the designated subcontractors on this project as required by the Subletting and Subcontracting Fair Practices Act, California Public Contract Code section 4100 et seq.

In accordance with California Public Contract Code section 22300, the District will permit the substitution of securities for any moneys withheld by the District to ensure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the District, or with a state or federally chartered bank as the escrow agent, who shall then pay such moneys to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

Each bidder's bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District; or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of bid as a guarantee that the bidder will enter into the proposed contract, if the same is awarded to such bidder, and will provide

the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event of failure to enter into said contract or provide the necessary documents, said security will be forfeited.

The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. The District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the Contract. These per diem rates, including holiday and overtime work, as well as employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the District, and are also available from the Director of the Department of Industrial Relations. Pursuant to California Labor Code section 1720 et seq., it shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

The Contractor and all subcontractors shall furnish certified payroll records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

Separate payment and performance bonds, each in an amount equal to 100% of the total Contract amount, are required, and shall be provided to the District prior to execution of the Contract and shall be in the form set forth in the Contract Documents.

All bonds (Bid, Performance, and Payment) must be issued by a California admitted surety as defined in California Code of Civil Procedure section 995.120.

Where applicable, bidders must meet the requirements set forth in Public Contract Code section 10115 et seq., Military and Veterans Code section 999 et seq. and California Code of Regulations, Title 2, Section 1896.60 et seq. regarding Disabled Veteran Business Enterprise ("DVBE") Programs. Forms are included in this Bid Package.

Any request for substitutions pursuant to Public Contract Code section 3400 must be made prior to the bid submitting a pre-bid RFI through Procore.

No telephone or facsimile machine will be available to bidders on the District premises at any time.

It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

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BUENA PARK SCHOOL DISTRICT

INSTRUCTIONS TO BIDDERS

1. Preparation of Bid Form. Proposals under these specifications shall be submitted on the blank forms furnished herewith at the time and place stated in the Notice Inviting Bids. All blanks in the bid form must be appropriately filled in, and all proposed prices must be stated clearly and legibly in both words and numerals. All bids must be signed by the bidder in permanent blue ink and submitted in sealed envelopes, bearing on the outside, the bidder's name, address, telephone number, and California Contractor's License number, and the name of the Project for which the bid is submitted. The District reserves the right to reject any bid if all of the above information is not furnished. It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

2. Bid Security. Each bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District; or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District, in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of such bidder's bid as a guarantee that the bidder will enter into the Contract, if the same is awarded to such bidder, and will provide the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event that a bidder is awarded the Contract and such bidder fails to enter into said Contract or provide the surety bond or bonds within five (5) calendar days after award of the Contract to bidder, said security will be forfeited.

3. Signature. The bid form, all bonds, all designations of subcontractors, the Contractor's Certificate, the Agreement, and all Guarantees must be signed in permanent blue ink in the name of the bidder and must bear the signature in longhand of the person or persons duly authorized to sign the bid.

If bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: one from the President and one from the Secretary or Assistant Secretary. Alternatively, the signature of other authorized officers or agents may be affixed, if a certified copy of the resolution of the corporate board of directors authorizing them to do so is provided to the District. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal.

If bidder is a partnership, the true name of the firm shall first be set forth, together with the names of all persons comprising the partnership or co-partnership. The bid must be signed by all partners comprising the partnership unless proof in the form of a certified copy of a statement of partnership acknowledging the signer to be a general partner is presented to the District, in which case the general partner may sign.

Bids submitted as joint ventures must so state and be signed by each joint venturer.

Bids submitted by individuals must be signed by the bidder unless an up to date power- of-attorney is on file in the District office, in which case, said person may sign for the individual.

The above rules also apply in the case of the use of a fictitious firm name. In addition, however, where a fictitious name is used, it must be so indicated in the signature.

4. Modifications. Changes in or additions to the bid form, recapitulations of the work bid upon, alternative proposals, or any other modification of the bid form which is not specifically called for in the Contract Documents may result in the District's rejection of the bid as not being responsive to the Notice Inviting Bids. **No oral or telephonic modification of any bid submitted will be considered**.

5. Erasures, Inconsistent or Illegible Bids. The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction creates no inconsistency and is suitably authenticated by affixing in the margin immediately opposite the correction the signature or signatures of the person or persons signing the bid. In the event of inconsistency between words and figures in the bid price, words shall control figures. In the event that the District determines that any bid is unintelligible, inconsistent, or ambiguous, the District may reject such bid as not being responsive to the Notice Inviting Bids.

6. Examination of Site and Contract Documents. Each bidder shall visit the site of the proposed work and become fully acquainted with the conditions relating to the construction and labor so that the facilities, difficulties, and restrictions attending the execution of the work under the Contract are fully understood. Bidders shall thoroughly examine and be familiar with the drawings and specifications and all others documents and requirements that are attached to and/or contained in the Project Manual or other documents issued to bidders. The failure or omission of any bidder to receive or examine any Contract Documents, form, instrument, addendum, or other document or to visit the site and become acquainted with conditions there existing shall not relieve any bidder from obligations with respect to the bid or to the contract. The submission of a bid shall be taken as prima facie evidence of compliance with this Section. Bidders shall not, at any time after submission of the bid, dispute, complain, or assert that there were any misunderstandings with regard to the nature or amount of work to be done.

7. Withdrawal of Bids. Any bid may be withdrawn, either personally or by written request, at any time prior to the scheduled closing time for receipt of bids. The bid security for bids withdrawn prior to the scheduled closing time for receipt of bids, in accordance with this paragraph, shall be returned upon demand therefor.

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

8. Agreements, Insurance and Bonds. The Agreement form which the successful bidder, as Contractor, will be required to execute, and the forms and amounts of surety bonds and insurance endorsements which Contractor will be required to be furnished at the time of execution of the Agreement, are included in the bid documents and should be carefully examined by the bidder. The number of executed copies of the Agreement, the Performance Bond, and the Payment Bond required is three (3). Payment and Performance bonds must be executed by an admitted surety insurer as defined in Code of Civil Procedure 995.120.

9. Interpretation of Plans and Documents/Pre-Bid Clarification. If any prospective bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in, or omissions, a written request for an interpretation or correction thereof may be submitted to the District. The bidder submitting the request shall be responsible for its prompt delivery. **Any interpretation or correction of the Contract Documents will only be made by Addendum duly issued, and a copy of such Addendum will be made available for each contractor receiving a set of the Contract Documents.** No person is

authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the District. If discrepancies on drawings, specifications or elsewhere in the Contract Documents are not covered by addenda, bidder shall include in their bid methods of construction and materials for the higher quality and complete assembly. Pre-bid clarifications are to be submitted prior to **3:00 PM on Thursday April 7th, 2022** through Procore. Requests received after this date shall not be considered or responded to. A written response to timely pre-bid clarifications requests which materially affects the bidders price will be made by Addendum issued by the District not less than seventy-two (72) hours prior to bid opening.

10. Bidders Interested in More Than One Bid. No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one prime bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a proposal or quoting prices to other bidders or making a prime proposal.

11. Award of Contract. The Contract will be awarded to the lowest responsive responsible bidder by action of the governing Board. The District reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding. In the event an award is made to bidder, and such bidder fails or refuses to execute the Contract and provide the required documents within five (5) calendar days after award of the Contract to bidder, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders**. Each bid must conform and be responsive to the Contract Documents as defined in the General Conditions**.

12. Bid Protest Procedure. Any bidder may file a bid protest. The protest shall be filed in writing with the District's Construction Manager not more than five (5) business days after the date of the bid opening. An e-mail address shall be provided and by filing the protest, protesting bidder consents to receipt of e-mail notices for purposes of the protest and protest related questions and protest appeal, if applicable. The protest shall specify the reasons and facts upon which the protest is based.

a. Resolution of Bid Controversy: Once the bid protest is received, the apparent lowest responsible bidder will be notified of the protest and the evidence presented. If appropriate, the apparent low bidder will be given an opportunity to rebut the evidence and present evidence that the apparent low bidder should be allowed to perform the Work. If deemed appropriate by the District, an informal hearing will be held. District will issue a written decision within fifteen (15) calendar days of receipt of the protest, unless factors beyond the District's reasonable control prevent such resolution. The decision on the bid protest will be copied to all parties involved in the protest.

b. Appeal: If the protesting bidder or the apparent low bidder is not satisfied with the decision, the matter may be appealed to the Chief Financial Officer, or their designee, within three (3) business days after receipt of the District's written decision on the bid protest. The appeal must be in writing and sent via overnight registered mail with all accompanying information relied upon for the appeal and an e-mail address from which questions and responses may be provided to:

Buena Park School District
Business Services
6885 Orangethorpe Ave, Buena Park, CA 90620

c. Appeal Review: The Chief Financial Officer or their designee shall review the decision on the bid protest from the Construction Manager and issue a written response to the appeal, or if appropriate,

appoint a Hearing Office to conduct a hearing and issue a written decision. The written decision of the Chief Financial Officer or the Hearing Officer shall be rendered within fifteen (15) calendar days and shall state the basis for the decision. The decision concerning the appeal will be final and not subject to any further appeals.

d. Reservation of Rights to Proceed with Project Pending Appeal. The District reserves the right to proceed to award the Project and commence construction pending an Appeal. If there is State Funding or a critical completion deadline, the District may choose to shorten the time limits set forth in this Section if written notice is provided to the protesting party. E-mailed notice with a written confirmation sent by First Class Mail shall be sufficient to constitute written notice. If there is no written response to a written notice shortening time, the District may proceed with the award.

e. Finality. Failure to comply with this Bid Protest Procedure shall constitute a waiver of the right to protest and shall constitute a failure to exhaust the protesting bidder's administrative remedies.

13. Alternates. If alternate bids are called for, the Contract may be awarded at the election of the Governing Board to the lowest responsible and responsive bidder using the method and procedures outlined in the Notice Inviting Bids and as specified in the section entitled Alternate/Deductive Bid Alternates.

a. Subcontractor Listing for Alternates. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate.

14. Evidence of Responsibility. Upon the request of the District, a bidder whose bid is under consideration for the award of the Contract shall submit promptly to the District satisfactory evidence showing the bidder's financial resources, surety and insurance claims experience, construction experience, completion ability, workload, organization available for the performance of the Contract, and other factors pertinent to a Project of the scope and complexity involved.

15. Listing Subcontractors. Each bidder shall submit with his bid, on the form furnished with the Contract Documents, a list of the names, license numbers, scopes of work, locations of the places of business, contact information, and Department of Industrial Relations ("DIR") registration numbers of each subcontractor who will perform work or labor or render service to the bidder in or about the project, or a subcontractor who under subcontract to the bidder, specially fabricates and installs a portion of the work, in an amount in excess of one-half of 1 percent of the bidder's total bid as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code section 4100, et seq.) Pursuant to Labor Code section 1725.5, all subcontractors (of any tier) performing work on this Project must be properly registered with DIR.

16. Workers' Compensation. In accordance with the provisions of Labor Code section 3700, the successful bidder as the Contractor shall secure payment of compensation to all employees. The Contractor shall sign and file with the District the following certificate prior to performing the work under this contract: "I am aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract." The form of such certificate is included as a part of the Bid Documents.

17. Contractor's License. To perform the work required by this notice, the Contractor must possess the Contractor's License as specified in the Notice Inviting Bids, and the Contractor must maintain the license throughout the duration of the contract. If, at the time of bid, bidder is not licensed to perform the

Project in accordance with Division 3, Chapter 9, of the Business and Professions Code for the State of California and the Notice to Contractors calling for bids, such bid will not be considered and the Contractor will forfeit its bid security to the District.

18. Anti-Discrimination. It is the policy of the District that in connection with all work performed under contracts, there be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, or marital status. The Contractor agrees to comply with applicable federal and California laws, including, but not limited to, the California Fair Employment and Housing Act, beginning with Government Code section 12900 and Labor Code section 1735. In addition, the Contractor agrees to require like compliance by any subcontractors employed on the work by such Contractor.

19. Preference for Materials and Substitutions.

a. One Product Specified. Unless the Plans and Specifications state that no Substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, construction, or any specific name, make, trade name, or catalog number, with or without the words, "or equal," such specification shall be read as if the language "or equal" is incorporated.

b. Request for Substitution. Bidder may, unless otherwise stated, offer any material, process, article, etc., which is materially equal or better in every respect to that so indicated or specified ("Specified Item") and will completely accomplish the purpose of the Contract Document. If bidder desires to offer a Substitution for a Specified Item, such bidder must make a request in writing on the District's Substitution Request Form ("Request Form") and submit the completed Request Form as an Request for Clarification (see item 9 above) prior to the Request for Clarification cutoff date. The Request Form must be accompanied by evidence as to whether the proposed substitution:

1) Is equal in quality, service, and ability to the Specified Item as demonstrated by a side by side comparison of key characteristics and performance criteria (CSI comparison chart);
2) Will entail no changes in detail, construction and scheduling of related work;
3) Will be acceptable in consideration of the required design and artistic effect;
4) Will provide no cost disadvantage to the District;
5) Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
6) Will require no change in the Contract Time.

Any and all Drawings, Specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder. The District shall have sole discretion in deciding as to whether a proposed request for Substitution is equal to or better than a Specified Item. Any request for Substitution which is granted by the District shall be documented and processed through a Change Order. The District may condition its approval of any Substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the Substitution. Any and all risks of delay due to DSA, or any other governmental agency having jurisdiction shall be on the bidder.

20. Disqualification of Bidders and Proposals. More than one proposal for the same work from any individual, firm, partnership, corporation, or association under the same or different names will not be

accepted; and reasonable grounds for believing that any bidder is interested in more than one proposal for the work will be cause for rejecting all proposals in which such bidder is interested and the bidder will forfeit their bid security to the District.

21. Unbalanced or Altered Bids. Proposals in which the prices are obviously unbalanced, and those which are incomplete or show any alteration of form, or contain any additions or conditional or alternate bids that are not called for or otherwise permitted, may be rejected. A proposal on which the signature of the bidder has been omitted may be rejected. If, in the District's sole discretion, it determines any pricing, costs or other information submitted by a bidder may result in an unbalanced bid, the District may deem such bid non-responsive. A bid may be determined by the District to be unbalanced if the bid is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the District even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advanced payment.

22. Employment of Apprentices. The Contractor and all Subcontractors shall comply with the provisions of California Labor Code including, but not limited to sections 1777.5, 1777.6, and 1777.7 concerning the employment of apprentices. The Contractor and any Subcontractor under him shall comply with the requirements of said sections, including applicable portions of all subsequent amendments in the employment of apprentices; however, the Contractor shall have full responsibility for compliance with said Labor Code sections, for all apprenticeable occupations, regardless of any other contractual or employment relationships alleged to exist.

23. Non-Collusion Declaration. Public Contract Code section 7106 requires bidders to submit declaration of non-collusion with their bids. This form is included with the bid documents and must be signed and dated by the bidder under penalty of perjury.

24. Wage Rates, Travel and Subsistence.

a. The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. Pursuant to Labor Code section 1770 et seq., the District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the contract. Copies are available from the District to any interested party on request and are also available from the Director of the Department of Industrial Relations. The Contractor shall obtain copies of the above-referenced prevailing wage sheets and post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

b. Any worker employed to perform work on the Project and such work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

c. Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

d. These per diem rates, including holiday and overtime work, and employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the administrative office of the District, located as noted above and are also available from the Director of the Department of Industrial Relations. It is the Contractor's responsibility to ensure the appropriate prevailing rates of per diem wages are paid for each classification. It shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

25. DIR Registration of Contractor and Subcontractors. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

This Project is a public works project as defined in Labor Code section 1720. Each contractor bidding on this Project and all subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with DIR and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. For more information and up to date requirements, contractors are recommended to periodically review the DIR's website at www.dir.ca.gov. Contractor shall be solely responsible for ensuring compliance with Labor Code section 1725.5 as well as any requirements implemented by DIR applicable to its services or its subcontractors throughout the term of the Agreement and in no event shall contractor be granted increased payment from the District or any time extensions to complete the Project as a result of contractor's efforts to maintain compliance with the Labor Code or any requirements implemented by the DIR. Failure to comply with these requirements shall be deemed a material breach of this Agreement and grounds for termination for cause. The contractor and all subcontractors shall furnish certified payroll records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. The District reserves the right to withhold contract payments if the District is notified, or determines as the result of its own investigation, that contractor is in violation of any of the requirements set forth in Labor Code section 1720 et seq. at no penalty or cost to the District. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

26. No Telephone or Facsimile Availability. No telephone or facsimile machine will be available to bidders on the District premises at any time.

27. Obtaining Bidding Documents. Bidding Documents, may be obtained from:

The bid documents are available free of charge via Procore by emailing the Project Manager

Bidder shall utilize a complete set of Bidding Documents in preparing a bid. The failure or omission of bidder to receive any Bidding Document, form, instrument, Addendum, or other document shall not relieve bidder from any obligations with respect to the bid and/or Contract.

28. Addenda. Clarification or any other notice of a change in the Bidding Documents will be issued only by the District and only in the form of a written Addendum, transmitted by fax, e-mail, or available for pick up to all who are known by the issuing office to have received a complete set of Bidding Documents. Any other purported Addenda are void and unenforceable.

Bidder is responsible for ascertaining the disposition of all Addenda issued regardless of District notification and to acknowledge all Addenda in the submitted sealed bid prior to the bid opening. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for inspection. Each Addendum will be numbered, dated, and identified with the Project number. Oral statements or any instructions in any form, other than Addendum as described above, shall be void and unenforceable. Addenda issued by the District and not noted as being acknowledged by bidder as required in the Bid Form, may result in the bid being deemed non-responsive.

29. Debarment. Bidder may also be subject to debarment, in addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor pursuant to Article 15 of the General Conditions if the Board, or the Board may designate a hearing officer who, in his or her discretion, finds the Contractor has done any of the following:

a. Intentionally or with reckless disregard, violated any term of a contract with the District

b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;

c. Committed an act or offense which indicates a lack of business integrity or business honesty; or,

d. Made or submitted a false claim against the District or any other public entity (See Government Code section 12650, et seq., and Penal Code section 72)

CHECKLIST OF MANDATORY BID FORMS

(For Contractor's use and reference only. Additional documents may be required so bidders should carefully review all Contract Documents and Bid Documents)

- ❑ Designation of Subcontractors
- ❑ Bid Form
- ❑ Contractor's Certificate Regarding Workers Compensation
- ❑ Non-Collusion Declaration
- ❑ Bid Bond (or Bid Guarantee form if Security is other than Bid Bond)
- ❑ Request for Substitution Form
- ❑ Acknowledgment of Bidding Practices Regarding Indemnity
- ❑ DVBE Participation Statement
- ❑ Contractor's Certificate Regarding Drug-Free Work Place
- ❑ Contractor's Certificate Regarding Alcoholic Beverage and Tobacco-Free Campus Policy

DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code section 4100 et seq.,) and any amendments thereof, each Bidder shall set forth below: (a) the name, license number, and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor, who will perform work or labor or work or improvement to be performed under this Contract, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvements according to detailed Drawings contained in the Plans and Specifications in an amount in excess of one-half of one percent of the Contractor's total bid; and (b) the portion and description of the work which will be done by each subcontractor under this Act. The Contractor shall list only one subcontractor for each such portion as is defined by the Contractor in this bid. All subcontractors shall be properly licensed by the California State Licensing Board.

If a Contractor fails to specify a subcontractor, or if a Contractor specifies more than one subcontractor for the same portion of work to be performed under the Contract in excess of one-half of one percent of the Contractor's total bid, the Contractor shall be deemed to have agreed that the Contractor is fully qualified to perform that portion, and that the Contractor alone shall perform that portion.

No Contractor whose bid is accepted shall (a) substitute any subcontractor, (b) permit any subcontractor to be voluntarily assigned or transferred or allow the relevant portion of the work to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the Contractor's total bid where the original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act.

Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the Contractor's total bid where no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding, reduced to writing as a public record, of the authority awarding this Contract setting forth the facts constituting the emergency or necessity.

All subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project.

NOTE: If alternate bids are called for and bidder intends to use different or additional subcontractors on the alternates, a separate list of subcontractors must be provided for each such Alternate.

DESIGNATION OF SUBCONTRACTORS FORM

Scope of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	DIR Registration Number	*E-Mail & Telephone**

Scope of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	DIR Registration Number	*E-Mail & Telephone**

* This information must be provided at the time of submission of bid or must be provided within 24 hours after the time set for the opening of bids. Bidders who choose to provide this information within 24 hours after the time set for the opening of bids are solely responsible to ensure the District receives this information in a timely manner. The District is not responsible for any problems or delays associated with emails, faxes, delivery, etc. Absent a verified fax or email receipt date and time by the District, the District's determination of whether the information was received timely shall govern and be determinative. Bidder shall not revise or amend any other information in this form submitted at the time of bid. The information submitted at the time of bid shall govern over any conflicts, discrepancies, ambiguities or other differences in any subsequent Subcontractor Designation Forms submitted by the bidder.

Proper Name of Bidder: _____

Date: _____

Name: _____

Signature of Bidder Representative: _____

Address: _____

Phone: _____

_____

BID FORM

FOR

MPR MODERNIZATION PROJECTS

BUENA PARK SCHOOL DISTRICT

6885 Orangethorpe Ave, Buena Park, CA 90260

Bid No. 14-2022

FOR

BUENA PARK SCHOOL DISTRICT

CONTRACTOR NAME: _____

ADDRESS: _____

_____

TELEPHONE: ( ) _____

FAX: ( ) _____

EMAIL _____

TO: Buena Park School District, acting by and through its Governing Board, herein called "District".

1. Pursuant to and in compliance with your Notice Inviting Bids and other documents relating thereto, the undersigned bidder, having familiarized himself with the terms of the Contract, the local conditions affecting the performance of the Contract, the cost of the work at the place where the work is to be done, with the Drawings and Specifications, and other Contract Documents, hereby proposes and agrees to perform within the time stipulated, the Contract, including all of its component parts, and everything required to be performed, including its acceptance by the District, and to provide and furnish any and all labor, materials, tools, expendable equipment, and utility and transportation services necessary to perform the Contract and complete all of the Work in a workmanlike manner required in connection with the construction of:

BID NO. 14-2022 MPR MODERNIZATION PROJECTS

The Modernization of the MPRs at Emery, Corey, Whitaker, and Gilbert Elementary Schools; including, ADA compliance improvements, and new finishes, in the District described above, all in strict conformance with the drawings and other Contract Documents on file at the Purchasing Office of said District for amounts set forth herein.

2. BIDDER ACKNOWLEDGES THE FOLLOWING ADDENDUM:

Number	Number	Number	Number	Number	Number	Number	Number
_____	_____	_____	_____	_____	_____	_____	_____

Acknowledge the inclusion of all addenda issued prior to bid in the blanks provided above. Your failure to do so may render your bid non-responsive.

3. TOTAL CASH PURCHASE PRICE IN WORDS & NUMBERS (Including all allowances noted in the Special Conditions):

_____ DOLLARS

($ _____)

4. ALTERNATE BIDS: The following amounts shall be added to or deducted from the Base Bid at the District's option. Alternates are fully described in the Specifications.

NO BID ALTERNATES

5. TIME FOR COMPLETION: The District may give a notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received the notice to proceed, the Contractor shall complete the work in the time specified in the Agreement. By submitting this bid, Contractor has thoroughly studied this Project and agrees that the Contract Time for this Project is adequate for the timely and proper completion of the Project. Further, Contractor has included in the analysis of the time required for this Project, Rain Days, Governmental Delays, and the requisite time to complete Punch List.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the

Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause a hardship to it, the Contractor may terminate the contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder, if applicable.

It is understood that the District reserves the right to reject any or all bids and/or waive any irregularities or informalities in this bid or in the bid process. The Contractor understands that it may not withdraw this bid for a period of ninety (90) days after the date set for the opening of bids.

6. Attached is bid security in the amount of not less than ten percent (10%) of the bid:

Bid bond (10% of the Bid), certified check, or cashier's check (circle one)

7. The required List of Designated Subcontractors is attached hereto.

8. The required Non-Collusion Declaration is attached hereto.

9. The Substitution Request Form, if applicable, is attached hereto.

10. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the District a Contract in the form attached hereto in accordance with the bid as accepted, and that he or she will also furnish and deliver to the District the Performance Bond and Payment Bond, all within five (5) calendar days after award of Contract, and that the work under the Contract shall be commenced by the undersigned bidder, if awarded the Contract, by the start date provided in the District's Notice to Proceed, and shall be completed by the Contractor in the time specified in the Contract Documents.

11. The names of all persons interested in the foregoing proposal as principals are as follows:

_____

_____

_____

_____

_____

(IMPORTANT NOTICE: If bidder or other interested person is a corporation, state the legal name of such corporation, as well as the names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state the true names of the firm, as well as the names of all individual co-partners comprising the firm; if bidder or other interested person is an individual, state the first and last names in full.)

12. PROTEST PROCEDURES. If there is a bid protest, the grounds shall be submitted as set forth in the Instructions to Bidders.

13. The undersigned bidder shall be licensed and shall provide the following California Contractor's license information:

License Number: _____

License Expiration Date: _____

Name on License: _____

Class of License: _____

DIR Registration Number: _____

If the bidder is a joint venture, each member of the joint venture must include the above information.

14. Time is of the essence regarding this Contract, therefore, in the event the bidder to whom the Contract is awarded fails or refuses to post the required bonds and return executed copies of the Agreement form within five (5) calendar days from the date of receiving the Notice of Award, the District may declare the bidder's bid deposit or bond forfeited as damages.

15. The bidder declares that he/she has carefully examined the location of the proposed Project, that he/she has examined the Contract Documents, including the Plans, General Conditions, Supplemental Conditions, Addenda, and Specifications, all others documents and requirements that are attached to and/or contained in the Project Manual, all other documents issued to bidders and read the accompanying instructions to bidders, and hereby proposes and agrees, if this proposal is accepted, to furnish all materials and do all work required to complete the said work in accordance with the Contract Documents, in the time and manner therein prescribed for the unit cost and lump sum amounts set forth in this Bid Form.

16. DEBARMENT. In addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor pursuant to Article 15 of the General Conditions if the Board, or the Board may designate a hearing officer who, in his or her discretion, finds the Contractor has done any of the following:

a. Intentionally or with reckless disregard, violated any term of a contract with the District;

b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;

c. Committed an act or offense which indicates a lack of business integrity or business honesty; or

d. Made or submitted a false claim against the District or any other public entity. (See Government Code section 12650, et seq., and Penal Code section 72)

17. DESIGNATION OF SUBCONTRACTORS. In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code section 4100 et seq.) and any

amendments thereof, each bidder shall list subcontractors on the District's form Subcontractor list. This subcontractor list shall be submitted with the bid and is a required form

I agree to receive service of notices at the e-mail address listed below.

I the below-indicated bidder, declare under penalty of perjury that the information provided and representations made in this bid are true and correct.

_____
Proper Name of Company

_____
Name of Bidder Representative

_____
Street Address

_____
City, State, and Zip

( )_____
Phone Number

( )_____
Fax Number

_____
E-Mail

By: _____ Date:_____
Signature of Bidder Representative

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of authorized officers or agents and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his signature shall be placed above.

All signatures must be made in permanent blue ink.

CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION FORM

Labor Code section 3700 in relevant part provides:

Every employer except the State shall secure the payment of compensation in one or more of the following ways:

1. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this State.

2. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to employees.

3. For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the director of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which, on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702.

I am aware of the provisions of Labor Code section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provision before commencing the performance of the work of this Contract.

_____
(Signature)

_____
(Print)

_____
(Date)

In accordance with Article 5 (commencing at section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and submitted with the Contractor's bid.

NON-COLLUSION DECLARATION

The undersigned declares:

I am the _____ [Title] of _____ [Name of Company], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [Date], at _____ [City], _____ [State].

Signed: _____

Typed Name: _____

BID GUARANTEE FORM

(Use only when not using a Bid Bond)

Accompanying this proposal is a cashier's check payable to the order of the Buena Park School District or a certified check payable to the order of the Buena Park School District in an amount equal to ten percent (10%) of the base bid and alternates ($_____).

The proceeds of this check shall become the property of said District, if, this proposal shall be accepted by the District through the District's Governing Board, and the undersigned fails to execute a Contract with and furnish the sureties required by the District within the required time; otherwise, said check is to be returned to the undersigned.

_____

Bidder

Note: Use this form, in lieu of Bid Bond form, when a cashier's check or certified check is accompanying the bid

BID BOND FORM

KNOW ALL MEN BY THESE PRESENT that we, the undersigned, (hereafter called "Principal"), and _____ (hereafter called "Surety"), are hereby held and firmly bound unto the Buena Park School District (hereafter called "District") in the sum of _____ ($_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.

SIGNED this _____ day of _____, 22___.

The condition of the above obligation is such that whereas the Principal has submitted to the District a certain Bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing for the construction of _____.

NOW, THEREFORE,

a. If said Bid is rejected, or

b. If said Bid is accepted and the Principal executes and delivers a Contract or the attached Agreement form within five (5) calendar days after acceptance (properly completed in accordance with said Bid), and furnishes bonds for his faithful performance of said Contract and for payment of all persons performing labor or furnishing materials in connection therewith,

Then this obligation shall be void; otherwise, the same shall remain in force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or the call for bids, or the work to be performed thereunder, or the specifications accompanying the same, shall in anyway affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of said Contract, or the call for bids, or the work, or to the specifications.

In the event suit is brought upon this bond by the District and judgment is recovered, the Surety shall pay all costs incurred by the District in such suit, including without limitation, attorneys' fees to be fixed by the court.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year first set forth above.

By _____
(Corporate Seal)

Principal's Signature

_____
Typed or Printed Name

_____
Principal's Title

By _____
(Corporate Seal)

Surety's Signature

_____
Typed or Printed Name

_____
Title

_____
(Attached Attorney in Fact Certificate)

Surety's Name

_____
Surety's Address

_____
Surety's Phone Number

IMPORTANT:

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant, or loan funds, it must also appear on the Treasury Department's most current list (Circular 570 as amended).

THIS IS A REQUIRED FORM.

Any claims under this bond may be addressed to:

(Name and Address of Surety)

_____

_____

_____

(Name and Address of agent or representative for
service of process in California if different from above)

_____

_____

_____

(Telephone Number of Surety and agent or
representative for service of process in California).

_____

_____

_____

REQUEST FOR SUBSTITUTION

Pursuant to Public Contract Code section 3400, bidder submits the following request to Substitute with the bid that is submitted. I understand that if the request to substitute is not an "or equal" or is not accepted by District and I answer "no" I will not provide the specified item, then I will be held non-responsive and my bid will be rejected. With this understanding, I hereby request Substitution of the following articles, devices, equipment, products, materials, fixtures, patented processes, forms, methods, or types of construction:

	Specification Section	Specified Item	Requested Substituted Item	Contractor Agrees to Provide Specified Item if request to Substitute is Denied[1] (circle one)	District Decision (circle one)
1.				Yes No	Grant Deny
2.				Yes No	Grant Deny
3.				Yes No	Grant Deny
4.				Yes No	Grant Deny
5.				Yes No	Grant Deny
6.				Yes No	Grant Deny
7.				Yes No	Grant Deny
8.				Yes No	Grant Deny
9.				Yes No	Grant Deny
10.				Yes No	Grant Deny
11.				Yes No	Grant Deny
12.				Yes No	Grant Deny

This Request Form must be accompanied by evidence as to whether the proposed Substitution (1) is equal in quality, service, and ability to the Specified Item; (2) will entail no change in detail, construction, and scheduling of related work; (3) will be acceptable in consideration of the required design and artistic

[1] Bidder must state whether bidder will provide the Specified Item in the event the Substitution request is evaluate and denied. If bidder states that bidder will not provide the Specified Item the denial of a request to Substitute shall result in the rejection of the bidder as non-responsive. However, if bidder states that bidder will provide the Specified Item in the event that bidder's request for Substitution is denied, bidder shall execute the Agreement and provide the Specified Item(s). If bidder refuses to execute the Agreement due to the District's decision to require the Specified Item(s) at no additional cost, bidder's Bid Bond shall be forfeited.

effect; (4) will provide no cost disadvantage to the District; (5) will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; (6) will require no change of the construction schedule or milestones for the Project; and, (7) Contractor agrees to pay for any DSA Fees or other Governmental Plan check costs associated with this Substitution Request. (See General Conditions Section 3.6)

The undersigned states that the following paragraphs are correct:

4. The proposed Substitution does not affect the dimensions shown on the Drawings.

5. The undersigned will pay for changes to the building design, including Architect, engineering, or other consultant design, detailing, DSA plan check or other governmental plan check costs, and construction costs caused by the requested substitution.

6. The proposed substitution will have no adverse effect on other trades, the Contract Time, or specified warranty requirements.

7. Maintenance and service parts will be available locally for the proposed substitution.

8. In order for the Architect to properly review the substitution request, within five (5) days following the opening of bids, the Contractor shall provide samples, test criteria, manufacturer information, and any other documents requested by Architect or Architect's engineers or consultants, including the submissions that would ordinarily be required under Article 3.7 for Shop Drawings along with a document which provides a side by side comparison of key characteristics and performance criteria (often known as a CSI side by side comparison chart).

9. If Substitution Request is accepted by the District, Contractor is still required to provide a Submittal for the substituted item pursuant to Article 3.7 and shall provide required Schedule information (including schedule fragnets, if applicable) for the substituted item as required under Article 8.3.2.1. The approval of the Architect, Engineer, or District of the substitution request does not mean that the Contractor is relieved of Contractor's responsibilities for Submittals, Shop Drawings, and schedules under Article 3.7 and 8.3.2 if the Contractor is awarded the Project.

Name of Bidder: _____

By:_____

District: _____

By: _____

ACKNOWLEDGMENT OF BIDDING PRACTICES REGARDING INDEMNITY FORM

TO: Buena Park School District

RE: Project Number _____

Construction Contract for _____

Please be advised that with respect to the above-referenced Project the undersigned Contractor on behalf of itself and all subcontractors hereby waives the benefits and protection of Labor Code section 3864, which provides:

"If an action as provided in this chapter is prosecuted by the employee, the employer, or both jointly against the third person results in judgment against such third person, the employer shall have no liability to reimburse or hold such third person harmless on such judgment or settlement in the absence of a written agreement to do so executed prior to the injury."

This Agreement has been signed by an authorized representative of the contracting party and shall be binding upon its successors and assignees. The undersigned further agrees to promptly notify the District of any changes of ownership of the contracting party or any subcontractor while this Agreement is in force.

_____
Contracting Party

_____
Name of Agent/Title

DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) PARTICIPATION STATEMENT

Each bidder must complete this form in order to comply with the Buena Park School District ("District") policy for participation of disabled veteran business enterprises (School District projects funded in whole or in part by the State of California pursuant to the Leroy F. Greene School Facilities Act of 1998. (Education Code §17070.10, *et seq*.)

MPR Modernization Projects:

Bid No.: _____

DSA No.: _____

The undersigned, on behalf of the Contractor named below, certifies that the Contractor has made reasonable efforts to secure participation by DVBE in the Contract to be awarded for the above-referenced Bid No., including participation by DVBE subcontractors and/or material suppliers. **Check only one of the following**:

- ❑ The Contractor was unable after reasonable efforts to secure DVBE participation in the Contract for the above-referenced Project/Bid No. However, the Contractor will use DVBE services if the opportunity arises at any time during construction of the Project. Upon completion of the Project, the Contractor will report to the District the total dollar amount of DVBE participation in any Contract awarded to Contractor, and in any change orders, for the above-referenced Project.

- ❑ The Contractor has secured DVBE participation in the Contract for the above referenced Project/Bid No., and anticipates that such DVBE participation will equal approximately _____dollars ($_____), which represents approximately _____percent (___%) of the total Contract for such Project. Upon completion of the Project, Contractor will report to the District the actual total dollar amount of DVBE participation in the Contract awarded to Contractor, and in any change orders, for such Project

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

1. CONTRACTOR'S CERTIFICATE REGARDING DRUG-FREE WORKPLACE

This Drug-Free Workplace Certification form is required from all successful bidders pursuant to the requirements mandated by Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any State agency must certify that it will provide a drug-free workplace by performing certain specified acts. In addition, the Act provides that each contract or grant awarded by a State agency may be subject to suspension of payments or termination of the contract or grant, and the Contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

Pursuant to Government Code section 8355, every person or organization awarded a contract from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

1. Publishing a statement, notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace, and specifying actions which will be taken against employees for violations of the prohibition.

2. Establishing a drug-free awareness program to inform employees about all of the following:

   a. The dangers of drug abuse in the workplace;
   b. The person's or organization's policy of maintaining a drug-free workplace;
   c. The availability of drug counseling, rehabilitation and employee-assistance programs; and
   d. The penalties that may be imposed upon employees for drug abuse violations;

3. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will (a) publish a statement notifying employees concerning the prohibition of controlled substance at the workplace, (b) establish a drug-free awareness program, and (c) require each employee engaged in the performance of the contact be given a copy of the statement required by section 8355(a) and require such employee agree to abide by the terms of that statement.

I also understand that if the Buena Park School District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of Section 8355, that the contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350 et seq.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

DATE:_____ _____
CONTRACTOR

By:_____
Signature

CONTRACTOR'S CERTIFICATE REGARDING ALCOHOLIC BEVERAGE AND TOBACCO-FREE CAMPUS POLICY

The Contractor agrees that it will abide by and implement the District's Alcoholic Beverage and Tobacco-Free Campus Policy, which prohibits the use of alcoholic beverages and tobacco products, of any kind and at any time, in District-owned or leased buildings, on DISTRICT property and in DISTRICT vehicles. The Contractor shall procure signs stating "ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED" and shall ensure that these signs are prominently displayed in all entrances to school property at all times.

DATE:_____ _____
CONTRACTOR

By:_____
Signature

[End of Bid Documents to be Submitted with Bid]

AGREEMENT FORM

THIS AGREEMENT, entered into this XX day of XXXXXX, 2022 in the County of Orange of the State of California, by and between the Buena Park School District, hereinafter called the "District", and XXXXXXXXXXXXX, hereinafter called the "Contractor".

WITNESSETH that the District and the Contractor for the consideration stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK: The Contractor shall furnish all labor, materials, equipment, tools, and utility and transportation services, and perform and complete all work required in connection with MPR Modernization Projects ("Project") in strict accordance with the Contract Documents enumerated in Article 7 below. The Contractor shall be liable to the District for any damages arising as a result of a failure to comply with that obligation, and the Contractor shall not be excused with respect to any failure to so comply by an act or omission of the Architect, Engineer, Inspector, Division of the State Architect (DSA), or representative of any of them, unless such act or omission actually prevents the Contractor from fully complying with the Contract Documents and the Contractor protests, in accordance with the Contract Documents, that the act or omission is preventing the Contractor from fully complying with the Contract Documents. Such protest shall not be effective unless reduced to writing and filed with the District office within seven (7) days of the date of occurrence of such act or omission preventing the Contractor from fully complying with the Contract Documents.

ARTICLE 2 - TIME OF COMPLETION: The District may give notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received a notice to proceed, the Contractor shall reach Substantial Completion (See Article 1.1.46) of the Work within Seventy One (71) calendar days from receipt of the Notice to Proceed. This shall be called Contract Time. (See Article 8.1.1). It is expressly understood that time is of the essence.

Contractor has thoroughly studied the Project and has satisfied itself that the time period for this Project was adequate for the timely and proper completion of the Project within each milestone and within the Contract time. Further, Contractor has included in the analysis of the time required for this Project, items set forth in General Conditions Article 8.3.2.1, Submittal Schedules, Rain Day Float, and Governmental Delay Float.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the District's postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause hardship to it, the Contractor may terminate the Contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. It is further understood by the Contractor that in the event that the Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay the Contractor for the work performed by the Contractor at the time of notification of postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder.

ARTICLE 3 - LIQUIDATED DAMAGES: It being impracticable and infeasible to determine the amount of actual damage, it is agreed that the Contractor will pay the District the sum of One thousand dollars ($1,000) per calendar day for each and every day of delay beyond the Contract Time set forth in Article 2 of this Agreement (inclusive of Milestones that are critical on the critical path or noted as critical to the District) as liquidated damages and not as a penalty or forfeiture. In the event Liquidated Damages are not paid, the Contractor further agrees that the District may deduct such amount thereof from any money due or that may become due the Contractor under the Contract (See Article 9.6 and 2.2 of the General Conditions).

ARTICLE 4 - CONTRACT PRICE: The District shall pay to the Contractor as full consideration for the faithful performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, the sum of XXXXXXXXXXXXX DOLLARS ($ XXXXXXXX), said sum being the total amount stipulated in the Bid Contractor submitted. Payment shall be made as set forth in the General Conditions.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to in advance by the Contractor and the District, subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that the Contractor proceeds with a Change in work without an agreement between the District and Contractor regarding the cost of a Change Order, the Contractor waives any Claim of additional compensation for such additional work.

ARTICLE 5 - HOLD HARMLESS AGREEMENT: Contractor shall defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from all liabilities, claims, actions, liens, judgments, demands, damages, losses, costs or expenses of any kind arising from death, personal injury, property damage or other cause based or asserted upon any act, omission, or breach connected with or arising from the progress of Work or performance of service under this Agreement or the Contract Documents. As part of this indemnity, Contractor shall protect and defend, at its own expense, District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from any legal action including attorney's fees or other proceeding based upon such act, omission, breach or as otherwise required by this Article.

Furthermore, Contractor agrees to and does hereby defend, indemnify and hold harmless District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from every claim or demand made, and every liability, loss, damage, expense or attorney's fees of any nature whatsoever, which may be incurred by reason of:

(a) Liability for (1) death or bodily injury to persons; (2) damage or injury to, loss (including theft), or loss of use of, any property; (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) any other loss, damage or expense, sustained by any person, firm or corporation or in connection with the Work called for in this Agreement or the Contract Documents, except for liability resulting from the sole or active negligence, or the willful misconduct of the District.

(b) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of Contractor or any person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages or injury to or death of persons, loss (including theft) or loss of use of any property, sustained by any person, firm or corporation, including the District, arising out of or in any way connected with Work covered by this Agreement or the Contract Documents, whether said

injury or damage occurs either on or off District property, but not for any loss, injury, death or damages caused by the sole or active negligence or willful misconduct of the District.

(c) Any dispute between Contractor and Contractor's subcontractors/suppliers/ Sureties, including, but not limited to, any failure or alleged failure of the Contractor (or any person hired or employed directly or indirectly by the Contractor) to pay any Subcontractor or Materialman of any tier or any other person employed in connection with the Work and/or filing of any stop notice or mechanic's lien claims.

(d) Any claims, allegations, penalties, assessments, or liabilities to the extent caused by the Contractor's failure or the failure of any Subcontractor of any tier, to fully comply with the DIR registration requirements under Labor Code section 1725.5 at all times during the performance of any Work on the Project and shall reimburse the District for any penalties assessed against the District arising from any failure by the Contractor or any Subcontractor of any tier from complying with Labor Code sections 1725.5 and 1771.1. Nothing in this paragraph, however, shall require the Contractor or any Subcontractor to be liable to the District or indemnify the District for any penalties caused by the District in accordance with Labor Code section 1773.3 (g).

Contractor, at its own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings that may be brought or instituted against the District, its officers, agents or employees, on account of or founded upon any cause, damage, or injury identified herein Article 5 and shall pay or satisfy any judgment that may be rendered against the District, its officers, agents or employees in any action, suit or other proceedings as a result thereof.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the Owner, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA").

ARTICLE 6 - PROVISIONS REQUIRED BY LAW: Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein, and this Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not inserted correctly, then upon application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 7 - COMPONENT PARTS OF THE CONTRACT: The Contract entered into by this Agreement consists of the following Contract Documents, all of which are component parts of the Contract as if herein set out in full or attached hereto.

Notice Inviting Bids
Instructions to Bidders
Designation of Subcontractors
Non-Collusion Declaration
Bid Guarantee Form
Bid Bond

Bid Form
Contractor's Certificate Regarding Worker's Compensation
Acknowledgment of Bidding Practices Regarding Indemnity
DVBE Participation Statement and Close-Out Forms
Agreement Form
Payment Bond
Performance Bond
Guarantee
Escrow Agreement for Security Deposit In Lieu of Retention
Workers' Compensation/Employers Liability Endorsement
General Liability Endorsement
Automobile Liability Endorsement
Contractor's Certificate Regarding Drug-Free Workplace
Contractor's Certificate Regarding Alcohol and Tobacco
Contractor's Certificate Regarding Background Checks
General Conditions
Supplementary and Special Conditions
Specifications
All Addenda as Issued
Drawings/Plans
Substitution Request Form
Requirements, Reports and/or Documents in the Project Manual or Other Documents Issued to Bidders

All of the above named Contract Documents are intended to be complementary. Work required by one of the above named Contract Documents and not by others shall be done as if required by all.

ARTICLE 8 - PREVAILING WAGES: Wage rates for this Project shall be in accordance with the general prevailing rate of holiday and overtime work in the locality in which the work is to be performed for each craft, classification, or type of work needed to execute the Contract as determined by the Director of the Department of Industrial Relations. Copies of schedules of rates so determined by the Director of the Department of Industrial Relations are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

The following are hereby referenced and made a part of this Agreement and Contractor stipulates to the provisions contained therein.

1. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.)

2. California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 et seq.)

ARTICLE 9 - RECORD AUDIT: In accordance with Government Code section 8546.7(and Davis Bacon, if applicable) and Article 13.11 of the General Conditions, records of both the District and the Contractor shall be subject to examination and audit for a period of five (5) years after a Final Retention Payment or the Recording of a Notice of Completion, whichever occurs first.

ARTICLE 10 - CONTRACTOR'S LICENSE: The Contractor must possess throughout the Project a Class B-I Contractor's License, issued by the State of California, which must be current and in good standing.

IN WITNESS WHEREOF, this Agreement has been duly executed by the above named parties, on the day and year first above written.

Buena Park School District	CONTRACTOR:
By:_____	_____ Typed or Printed Name
By: _____ Purchasing and Contracts Director	_____ Title
Dated: _____	_____ Signature
	_____ Type or Printed Name
	_____ Title (Authorized Officers or Agents)
	_____ Signature
	(CORPORATE SEAL)

PAYMENT BOND

(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the BUENA PARK SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: _____ (hereinafter referred to as the "Public Work"); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code section 9550;

NOW, THEREFORE, We, _____, the undersigned Contractor, as Principal; and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the BUENA PARK SCHOOL DISTRICT and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of _____ Dollars ($_____), such sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code section 9550 et seq.

This bond shall inure to the benefit of any person named in Civil Code section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described;

nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF this instrument has been duly executed by the Principal and Surety above named, on the_____ day of _____, 20___.

PRINCIPAL/CONTRACTOR:

_____

By: _____

SURETY:

_____

By: _____
Attorney-in-Fact

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)	(Name and Address of agent or representative for service for service of process in California)
_____	_____
_____	_____
Telephone:_____	Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____, personally appeared _____, who proved on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact of _____ (Surety) and acknowledged to me that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (SEAL)
Notary Public in and for said State

Commission expires:_____

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.

PERFORMANCE BOND

(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the BUENA PARK SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: _____ (hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated _____ _____, (hereinafter referred to as the "Contract"), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

NOW, THEREFORE, we, _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the BUENA PARK SCHOOL DISTRICT in the sum of _____ Dollars ($_____), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications,

alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly take over and complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages; or, at Obligee's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract Price" (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract. Obligee shall not be required or obligated to accept a tender of a completion contractor from the Surety.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Surety shall remain responsible and liable for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20___.

PRINCIPAL/CONTRACTOR:

_____

By: _____

SURETY:

_____

By: _____
Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged: $_____ (This must be filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)	(Name and Address of agent or representative for service for service of process in California)
_____	_____
_____	_____
Telephone:_____	Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____, personally appeared _____, who proved on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact of _____ (Surety) and acknowledged to me that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (SEAL)
Notary Public in and for said State

Commission expires:_____

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.

GUARANTEE

Guarantee for _____. We hereby guarantee that the _____, which we have installed in _____ _____ has been done in accordance with the Contract Documents, including without limitation, the drawings and specifications, and that the work as installed will fulfill the requirements included in the bid documents. The undersigned and its surety agrees to repair or replace any or all such work, together with any other adjacent work, which may be displaced in connection with such replacement, that may prove to be defective in workmanship or material within a period of _____One____ (____1___) year from the date of the Notice of Completion of the above-mentioned structure by the Buena Park School District, ordinary wear and tear and unusual abuse or neglect excepted.

In the event the undersigned or its surety fails to comply with the above-mentioned conditions within a reasonable period of time, as determined by the District, but not later than ten (10) days after being notified in writing by the District or within forty eight (48) hours in the case of an emergency or urgent matter, the undersigned and its surety authorizes the District to proceed to have said defects repaired and made good at the expense of the undersigned and its surety, who will pay the costs and charges therefor upon demand. The undersigned and its surety shall be jointly and severally liable for any costs arising from the District's enforcement of this Guarantee.

	Countersigned
_____	_____
(Proper Name)	(Proper Name)
By: _____	By: _____
_____	_____
(Signature of Subcontractor or Contractor)	(Signature of General Contractor if for Subcontractor)

Representatives to be contacted for service:

Name: _____

Address: _____

_____

Phone Number:_____

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the Buena Park School District, 6885 Orangethorpe Ave, Buena Park, CA 90620, hereinafter called "Owner", and _____ whose address is _____, hereinafter called "Contractor", and _____ whose address is _____, hereinafter called "Escrow Agent".

For the consideration hereinafter set forth, the Owner, Contractor and Escrow Agent agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for Retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for ____ _____in the amount of _____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the Retention earnings directly to the escrow agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within ten (10) days of deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as Retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of the Owner, and shall designate the Contractor as beneficial owner.

2. The Owner shall make progress payments to the Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

3. When the Owner makes payments of Retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until such time as the escrow created under this Contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

7. The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven (7) days' written notice to the Escrow Agent from the Owner of the notice of default under Article 2.2, Article 9.6 or Article 14, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.

8. Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

_____
Title

_____
Name

_____
Signature

_____
Address

On behalf of Contractor:

_____
Title

_____
Name

_____
Signature

_____
Address

On behalf of Agent:

_____
Title

_____
Name

_____
Signature

_____
Address

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date set forth above.

OWNER	CONTRACTOR
_____	_____
Title	Title
_____	_____
Name	Name
_____	_____
Signature	Signature

INSURANCE DOCUMENTS & ENDORSEMENTS

The following insurance endorsements and documents must be provided to the Buena Park School District within five (5) calendar days after receipt of notification of award. If the apparent low bidder fails to provide the documents required below, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders, and the bidder's bid security will be forfeited. All insurance provided by the bidder shall fully comply with the requirements set forth in Article 11 of the General Conditions.

1. General Liability Insurance: Certificate of Insurance with all specific insurance coverages set forth in Article 11 of the General Conditions, proper Project description, designation of the District as the Certificate Holder, a statement that the insurance provided is primary to any insurance obtained by the District and minimum of 30 days' cancellation notice. Bidder shall also provide required additional insured endorsement(s) designating all parties required in Article 11 of the General Conditions. The additional insured endorsement shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) (Department)

_____
(Company)

_____
(Street Address)

_____
(City) (State) (Zip Code)

(_____) _____
(Telephone Number)

2. Workers' Compensation/ Employer's Liability Insurance: Certificate of Workers' Compensation Insurance meeting the coverages and requirements set forth in Article 11 of the General Conditions, minimum of 30 days' cancellation notice, proper Project description, waiver of subrogation and any applicable endorsements.

3. Automobile Liability Insurance: Certificate of Automobile Insurance meeting the coverages and requirements set forth in Article 11 of the General Conditions, minimum 30 days' cancellation notice, any applicable endorsements and a statement that the insurance provided is primary to any insurance obtained by the District.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) (Department)

_____
(Company)

_____
(Street Address)

_____
(City) (State) (Zip Code)

(_____) _____
(Telephone Number)

DATE:_____ _____
CONTRACTOR

By:_____

Signature

DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) CONTRACTOR CLOSE-OUT STATEMENT

The Contractor shall complete this form, as a condition to Final Payment, for purposes of reporting participation by Disabled Veteran Business Enterprises (DVBE) in the Contract for the Project/Bid No. specified below.

MPR Modernization Projects:

Bid No.: _____

DSA No.: _____

Name	Address/Phone	Category of Work*	$ Amount of Contract

* Categories of work include: (1) construction services (specify services that DVBE will provide); (2) architecture and engineering services; (3) procurement of materials, supplies and equipment; and (4) information technology.

The undersigned, on behalf of the Contractor, certifies that DVBE participation on the Contract for Bid No. _____equaled _____ dollars ($_____), which represents approximately ____ percent (___%) of the total Contract price including change orders for the Project.

Company: _____

Name:_____

Title: _____

Signature: _____

Date: _____

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(Modernization Projects)

_____ certifies that it has performed one of the following:
[Name of contractor/consultant]

❑ Pursuant to Education Code section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the _____ District, pursuant to the contract/purchase order dated _____, and that none have been convicted of serious or violent felonies, as specified in Penal Code sections 1192.7(c) and 667.5(c), respectively.

As further required by Education Code section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees of the undersigned who may come in contact with pupils.

OR

❑ Pursuant to Education Code section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:

❑ 1. The installation of a physical barrier at the worksite to limit contact with pupils.

❑ 2. Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date_____, 20___

_____
[Name of Contractor/Consultant]

_____

By its:_____

ATTACHMENT A:

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(INSERT NAMES OF EMPLOYEES WHO MAY COME IN CONTACT WITH PUPILS)

ARTICLE 1
DEFINITIONS

1.1 BASIC DEFINITIONS

NOTE: The following shall not be construed as a comprehensive list of all definitions in the Contract Documents and there may be other definitions set forth in the Contract Documents. Additionally, any references to any DSA forms, documents or requirements shall be construed to incorporate any updates, supplements, or additions. The Contractor shall be required to meet the latest DSA requirements applicable to the Project.

1.1.1 Action of the Governing Board is a vote of a majority of the District's Governing Board.

1.1.2 Approval means written authorization through action of the Governing Board. The Governing board has delegated to the Chief Financial Officer the authority to approve certain modifications, Change Orders or Immediate Change Directives (Subject to the limits of the Delegation of Authority provided by the Board). In no case shall the Chief Financial Officer have authority to approve total Change Orders or Modifications to the Project exceeding 10% of the Contract Sum.

1.1.3 Architect means the architect, engineer, or other design professional engaged by the District to design and perform general observation of the work of construction and interpret the Drawings and Specifications for the Project. (See ARTICLE 4)

1.1.4 As-Builts are a set of Plans and Specifications maintained by the Contractor clearly showing all changes, revisions, substitutions, field changes, final locations, and other significant features of the Project. The As-Builts shall be maintained continuously throughout the Work for the Project and is both a prerequisite to the issuance of Payment Application and a requirement for Contract Close-Out. (See Article 3.17)

1.1.5 Beneficial Occupancy is the point in time when a building or buildings are fit for occupancy is fit for occupancy and its intended use. Basic requirements are the building is safe, at or near Substantial Completion, and all fire/ life safety items are approved and operational. The fact that a building is occupied does not mean that the building is ready for Beneficial Occupancy if there are elements that are unsafe or if fire/ life safety items are not approved and operational. Taking occupancy on a structure that is under a fire watch is not considered beneficial occupancy. Further, taking of Beneficial Occupancy is not a point in time when retention is due unless the entire school has obtained a Certificate of Substantial Completion that meets the definition of 1.1.46.

1.1.6 Claims. A Claim is a request for payment, supported by back-up documentation which includes, invoices time sheets, or other documents substantiating legitimacy or entitlement that is submitted during the Project or immediately following the Project made prior to the Final Retention Payment Application and prior to Final Completion of the Project. A "Claim" means a separate demand by the Contractor for (1) time extension, (2) payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the CONTRACT and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (3) and amount the payment of which is disputed by the District. (See Article 4.6)

1.1.7 Change Order (CO). A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District's Governing Board), the Contractor, and the Architect, stating their agreement upon (1) A description of a change in the Work, (2) The amount of the adjustment in the Contract Sum, if any; and (3) The extent of the adjustment in the Contract Time, if any. (See Article 7.2)

1.1.8 Change Order Request (COR). A COR is a written request supported by backup documentation prepared by the Contractor requesting that the District and the Architect issue a CO based upon a proposed change, or a change that results in an adjustment in cost, time or both, or arising from an RFP, CCD or ICD. (See Article 7.6)

1.1.9 Close-Out means the process for Final Completion of the Project, but also includes the requirements for the DSA Certification that the Project is Complete (See DSA Certification Guide). (See Article 9.9)

1.1.10 Construction Change Document (CCD). A Construction Change Document is a DSA term that is utilized to address changes to the DSA approved Plans and Specifications. There are two types of Construction Change Documents. (1) DSA approved CCD Category A for work affecting structural, access or fire/ life safety of the Project which will require a DSA approval; and, (2) CCD Category B for work NOT affecting structural safety, access compliance or fire/ life safety that will not require a DSA approval (except to confirm that no approval is required). Both CCD Category A and Category B shall be set forth in DSA Form 140 and submitted to DSA as required. (See Article 7.3)

1.1.11 Complete/ Completion/ Final Completion means that all Work in the Contract Documents is finished, the requirements of the Contract Documents have been met, the Project has been Closed Out, and all Work has ceased on the Project. This may also be referred to as Final Completion. In most cases, the recording of a Notice of Completion shall represent Completion of the Project. Beneficial Occupancy does not mean the Work is Complete.

1.1.12 Completion Date is the date when all Work for the Project shall be Substantially Complete and is the date assigned at the end of the Contract Time for the Project. (See Article 1.1.46

1.1.13 Construction Manager. The Construction Manager is a consultant to the District contracted to assist in Project planning, management and construction of the Project. If there is a Construction Manager, they may assist in various aspects of the Project including, but not limited to Monitoring the progress of the construction, reviewing and monitoring the schedule, progress of work, monitoring pay requests, facilitating communications, advising the District and its Board of Education on various aspects of the construction process, monitoring the RFI, COR, CCD, ICD, RFP, Claims, Disputes and other Project related processes.

1.1.14 Contract or Agreement when the terms are used in these General Conditions shall be references to the Contract Documents as defined herein.

1.1.15 Contract Documents (sometimes referred to as Construction Documents) consist of the Agreement between District and Contractor (hereinafter the Agreement or Contract), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to bid, instructions to bidders, notice to bidders, and the requirements contained in the Bid Documents, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is a written amendment to the Contract signed by parties, a Change Order, a Construction Change Document, or a written order for a minor change in the Work issued by the Architect. The Contract

Documents collectively form the Contract. The Contract represents the entire and integrated Agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the District and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the District and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.16 Contract Time is the time period specified in the Contract Documents in which the Project shall be completed. This is sometimes referred to a Contract Duration, or "time in which the Contractor has to complete the Project". (See Article 8.1.1)

1.1.17 Contractor, District, and Architect are those mentioned as such in the Agreement. They are treated throughout the Contract Documents as if they are of singular number and neuter gender. Any reference to "Owner" shall mean "District" or Buena Park School District.

1.1.18 Cure is the act of remedying a material failure to perform under the terms of the Contract Documents during the time provided to correct Contractor's Default. Specific time periods are provided to Cure and Correct a Contractor Default under Article 14 and for a Partial Default under Article 2.2 as well as elsewhere in the Contract Documents.

1.1.19 Days mean calendar days unless otherwise specifically stated.

1.1.20 Default is a material breach of Contract. A Termination for Cause under Article 14 is a declaration of Default of the Contract and shall act as a demand upon the Surety to perform under the terms of the Performance Bond. Partial Defaults may also be tendered to the Surety at District's discretion. (See Article 2.2)

1.1.21 Dispute. A dispute is a disagreement on terms or conditions of the Project where the Contractor's opinion of the Project, Payment, Change Order or Request for Proposal differs from that of the District or Architect. A dispute only rises to the level of a claim once the dispute is assembled with back-up documentation and presented for evaluation. (See Article 4.6)

1.1.22 District Representative is the person designated by the District to represent the District during the Construction for the Project. This District Representative shall have the delegated authority as further defined in Article 1.1.2. This District Representative may be an employee of the District who may have the delegated authority as set forth in Article 1.1.3, and may also include Construction Managers. In some cases, the District and its Board may be assisted by a Construction Manager. When a Construction Manager is assisting the District, the Contractor, Architect, and Inspector shall have a primary contact with the District's Construction Manager who will advise the District.

1.1.23 Drawings/Plans are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including Plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect. Sometimes Drawings will also be included in Addenda, Change Orders, and Specifications.

1.1.24 DSA is the Division of State Architect. DSA is the agency that provides design and construction oversight for K-12 Schools, Community Colleges, and State Funded Charter School Projects. DSA is the responsible agency for this Project and Contractor has submitted a bid for the Project since Contractor is familiar with Contractor's responsibilities under the DSA requirements more thoroughly set forth at Title 24 of the California Code of Regulations. Contractor agrees to abide by the jurisdiction of DSA and shall construct the Project to conform with the approved Plans, Specifications, Addenda, and Change Orders (inclusive of approved CCD's and ICD's issued by the District pending CCD approval). See DSA website.

1.1.25 Emergency shall be defined as a sudden, unexpected occurrence, involving a clear and imminent threat to the continuation of school classes, a critical path delay that will result in not being able to occupy the school when students arrive to use the facility, danger from the facility or from outside the facility, Act of God, or other action which requires immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services.

1.1.26 Float the total number of days an activity may be extended or delayed without delaying the Completion Date shown in the schedule. Float will fall into three categories: (1) Rain Days; (2) Governmental Delays; and, (3) Project Float. (See Article 8.1.4)

1.1.27 Immediate Change Directive. (ICD) A written order prepared by the Architect and signed by the District and the Architect, directing a change in the Work where the Work must proceed immediately and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. (See Article 7.3)

1.1.28 Inspector of Record (IOR)/ Project Inspector (PI) is the individual retained by the District in accordance with Title 24 of the California Code of Regulations and who will be assigned to the Project

1.1.29 Notice of Non-Compliance (DSA Form 154) is a document issued by the Inspector if there is a deviation from the DSA approved Plans, Specifications, and Change Orders. (See Article 7.1.2)

1.1.30 Payment Application or Certificate of Payment is the Contractor's certified representation of the actual level of Work performed on the Project. Payment Applications are sometimes also called "Certificate of Payment", "Request for Payment", "Payment Application", or similar terms, and shall follow the Schedule of Values that are approved by the Architect, Inspector and District. (See Article 9.3)

1.1.31 Project is the complete construction of the Work performed in accordance with the Contract Documents.

1.1.32 Project Manual is the volume assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

1.1.33 Provide shall include "provide complete in place," that is "furnish and install complete."

1.1.34 Punch List/ Punch Item/ Incomplete Punch Item is a list of minor repair items, prepared after the issuance of a Certificate of Substantial Completion, by the Inspector and Architect of Work required in order to complete the Contract Documents and ensure compliance with the DSA Approved

Plans so the Project may be Closed Out. Issuance of the Retention Payment is dependent of the proper completion of the Punch List. (See Article 9.9)

1.1.34.1 *Contractor's List of Punch Items* is a list of minor repair items the Contractor submits when the Contractor considers the Work Substantially Complete. Submission of this List of Incomplete Punch Items is the Contractor's representation that the Project is Substantially Complete. (See Article 9.9.1.1)

1.1.35 Request for Information (RFI) is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems which have arisen under field conditions. (See Article 7.4)

1.1.36 Request for Proposal (RFP) is a written request prepared by the Architect (and/or CM) requesting the Contractor to submit to an estimate of the effect of a proposed change on the Contract Price and (if applicable) the Contract Time. (See Article 7.5)

1.1.37 Safety Orders are those issued by any city, county, state or federal agency having jurisdiction over the Project.

1.1.38 Schedule is the Contractor's view of the practical way in which the Work will be accomplished. In this Agreement there is a requirement for a Baseline Schedule and regular Schedule Updates that show all Work to be completed during the Contract Time and shall include all items listed under Article 8.3.2.9. See Article 8 of the General Conditions.

1.1.39 Schedule of Values is a detailed breakdown of the Contract Price for each Project, building, Phase of Work or Site as determined by the District. This Schedule of Values shall adequately detail the price for the Work so Progress Payments Applications can be meaningfully reviewed by the Inspector, Architect of Record, Engineer of Record, and District. (See Article 9.2)

1.1.40 Separate Contracts are Contracts that the District may have with other Contractors, vendors, suppliers, or entities to perform Work on the Project. This may include, but is not limited to Multi-Prime Trade Contractors, furniture installers, testing agencies, clean-up contractors, or network or low voltage contractors. Contractor shall plan for certain other contractors that may also be working on the Project site and address these other contractors in Contractor's Schedule. (See Article 6)

1.1.41 Site refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work.

1.1.42 Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.

1.1.43 Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these Specifications within limits specified. Federal, state and local regulations are incorporated into the Contract Documents by reference.

1.1.44 Stop Work Order, or an Order to Comply, is issued when either (1) the Work proceeds without DSA approval; (2) the Work proceeds without a DSA Inspector of Record, or (3) where DSA

determines that the Work is not being performed in accordance with applicable rules and regulations, and would compromise the structural integrity of the Project or would endanger lives. If a Stop Work Order is issued, the Work in the affected area shall cease until DSA withdraws the Stop Work Order. Pursuant to Education Code section 17307.5(b), the District shall not be held liable in any action filed against the District for any delays caused by compliance with the Stop Work Order

1.1.45 Subcontractor, as used herein, includes those having direct or indirect contracts with Contractor and ones who furnished labor, material or services for a special design according to Plans, Drawings, and Specifications of this Work.

1.1.46 Substantial Completion/ Substantially Complete(d) is not reached unless and until each of the following four (4) conditions have been met: (1) all contractually required items have been installed with the exception of only minor and Incomplete Punch List Items (See Article 9.9.1.2); (2) All Fire/Life Safety Systems have been installed, and are working and signed off on the DSA Form 152 Inspection Card, and all building systems including mechanical, electrical and plumbing are all functioning; (3) all other items DSA Form 152 Inspection Card for the Project have been approved and signed off; and (4) the Project is fit for occupancy and its intended use. For the purposes of this Contract, any references to Completion Date means Substantial Completion Date.

1.1.47 Substitution is a change in product, material, equipment, or method of construction from those required by the Construction Documents proposed by the Contractor. For this Project, a Substitution is subject to the filing of a Construction Substitution Request Form at the time of bid and meeting the requirements of Article 3.10.

1.1.48 Supplementary Conditions/ Supplementary General Conditions/ Special Conditions are terms that are sometimes used interchangeably and refer to any additional requirements or changes to the General Conditions as noted.

1.1.49 Surety is the person, firm, or corporation that executes as a bid bond, Payment Bond or Performance Bond guarantor on the Contractor's Bid, Contractor's Performance on the Contract and Payment of the Contractor's Subcontractors, material suppliers, vendors and labor on the Project. The Surety is bound to the same extent as the Contractor is bound once a Default occurs. A default includes a Termination for Substantial Failure to Perform under Article 14, but also includes any breach of Contract and is subject to the requirements and responsibilities as set forth in the Performance Bond.

1.1.50 Work shall include all labor, materials, services and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents. It shall include the initial obligation of any Contractor or Subcontractor who performs any portion of the Work, to visit the Site of the proposed Work (a continuing obligation after the commencement of the Work), to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried out under the Contract Documents, and make such investigation as it may see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor and its Subcontractors shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated Contract Documents and bid documents before preparing and submitting any bid.

1.1.51 Workers include laborers, workers, and mechanics.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 Correlation and Intent

1.2.1.1 *Documents Complementary and Inclusive*. The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work. All Contract Documents form the Contractor's Contract with the District. Any item of Work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both. The Contractor is bound to provide the Work complete and is under a legal duty to carefully study Plans and schedule operations well ahead of time and identify inconsistencies with the Plans and Specifications and call such inconsistencies to the attention of the Architect or Registered Engineer through the Inspector under Section 4-343(b) of Title 24.

1.2.1.2 *Work to be Complete*. Contractor has thoroughly studied the Contract Documents and understands that the District contracted with Contractor to provide a complete Project which means complete systems and buildings. The entire set of Contract Documents shows a complete Project and Contractor agrees that there are multiple disciplines putting together a set of Contract Documents. Thus, if portions of a system are shown on some Drawings and not others, this does not mean the Contractor is to only provide part of a system. For example, if an air conditioning unit is shown on the mechanical Drawings, the plumbing for the air conditioning is shown on another Drawing, and the electrical shown on the electrical Drawings, the Contractor is to provide a complete and working air conditioning system. The only time when an item is supplied incomplete is if the system is shown specifically as incomplete since others will be completing the system. Work includes, but is not limited to materials, workmanship, and manufacture of fabrication of components for the Project.

1.2.1.3 *Coverage of the Drawings and Specifications*. The Drawings and Specifications generally describe the Work to be performed by Contractor. Generally, the Specifications describe Work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown. All materials or labor for Work, which is shown on either the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to complete the Work), shall be provided by the Contractor. The Contractor is responsible for the whole Project as contractually set forth as the Contract Documents. It is intended that the Work be of sound, quality construction, and the Contractor shall be responsible for the inclusion of adequate amounts to cover installation of all items indicated, described, or implied in the portion of the Work to be performed by them.

1.2.1.4 *Conflicts*. In the event there is a discrepancy between the various Contract Documents, it is intended that the more stringent, higher quality, and greater quantity of Work shall apply.

1.2.1.5 *Conformance with Laws*. Each and every provision of law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, even if through mistake or otherwise any such provision is not inserted, or is not correctly inserted.

Before commencing any portion of the Work, Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws,

ordinances, codes, rules and regulations of all governmental authorities and public and municipal utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents. Such checking shall include review of Title 24 of the California Code of Regulations, California Building Code, local utility, local water connection, local grading and all other applicable agencies. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with the Contract Documents, Contractor shall, within five (5) days, notify the Inspector, Architect and District in writing of same and shall ensure that any such violation or inconsistency shall be corrected in the manner provided hereunder prior to the construction of that portion of the Project. (See Title 24 Section 4-343)

The Contractor shall bear all expenses of correcting Work done contrary to said laws, ordinances, rules, and regulations if the Contractor performed same (1) without first consulting the Architect for further instructions regarding said Work or (2) disregarded the Architect's instructions regarding said Work.

1.2.1.6 *Ambiguity and Inconsistency*. Before commencing any portion of the Work, Contractor shall carefully examine all Drawings and Specifications and other information given to Contractor as to materials and methods of construction and other Project requirements. Prior to commencing any portion of the Work, Contractor shall notify Architect and District in writing of any perceived or alleged error, inconsistency, conflict, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided herein. If the Contractor or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Price or the time for performance. Contractor shall maintain an adequate inspection system and perform personal observations and review work and pre-plan the project to ensure the Work performed under the Contract conforms to Contract requirements. Contractor shall maintain records of such review and observation to ensure strict compliance with the terms of the Contract.

1.2.1.7 *Typical Parts and Sections.* Whenever typical parts or sections of the Work are completely detailed on the Drawings, and other parts or sections which are of the same construction are shown in outline only, the complete or more detailed shall apply to the Work which is shown in outline.

1.2.1.8 *Dimensions.* Dimensions of Work shall not be determined by scale or rule. Figured dimensions shall be followed at all times. If figured dimensions are lacking on Drawings, Architect shall supply them on request. The Architect's decisions on matters relating to aesthetic effect will be final.

1.2.2 Addenda and Deferred Approvals

1.2.2.1 *Addenda* are the changes in Specifications, Drawings, Contract Documents, and Plans which have been authorized in writing by the District or Architect, and which alter, explain, or clarify the Contract Documents. Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda unless otherwise specified in the addenda.

1.2.2.2 *Deferred Approvals*. Deferred Approvals are Submittals that are reviewed by the Architect (or Engineer of Record) and submitted to DSA for approval based on thorough detailing of manufacturer and Project specific design. See Article 3.9.1and 3.9.3. The Deferred Approval item

cannot be fully detailed on the originally approved Drawings or Specifications because of variations in product design and manufacture. Contract Documents which require Deferred Approval items are meant to be for illustration purposes only. Approval of Plans for such a portion of the Work may be deferred until the material suppliers and Subcontractors are selected. All Deferred Approvals are noted in the Plans and Specifications. Contractor is responsible for all Deferred Approval requirements set forth in the Contract Documents. Contractor is responsible to comply with all laws, building codes, Title 24 and regulations necessary to obtain all necessary approvals, including those required from the Division of the State Architect ("DSA") and the State Fire Marshall. Contractor shall not be granted an extension of time for failure to plan, schedule for and obtain necessary approvals. Contractor shall Schedule all Deferred Approval items in the Baseline Schedule and Schedule Updates under Article 3.9.6

1.2.3 Specification Interpretation

1.2.3.1 *Titles*. The Specifications are separated into titled sections for convenience only and not to dictate or determine the trade or craft involved.

1.2.3.2 *As Shown, Etc*. Where "as shown," "as indicated," "as detailed," or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where "as directed," "as required," "as permitted," "as authorized," "as accepted," "as selected," or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Architect is intended unless otherwise stated.

1.2.3.3 *General Conditions*. The General Conditions and Supplementary General Conditions are a part of the Contract Documents which further defines and refines the Contract entered between the Contractor and District.

1.2.3.4 *Abbreviations*. In the interest of brevity, the Specifications are written in an abbreviated form and may not include complete sentences. Omission of words or phrases such as "Contractor shall," "shall be," etc., are intentional. Nevertheless, the requirements of the Specifications are mandatory. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings. In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.2.3.5 *Plural*. Words in the singular shall include the plural whenever applicable or the context so indicates.

1.2.3.6 *Metric*. The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1" (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the "International System of Units" (SI) and generally follow ASTM E 380, "Standard for Metric Practice."

1.2.3.7 *Standard Specifications*. Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization's standard specifications, which are in effect at the date of the Contractor's proposal unless directed otherwise. If applicable specifications are revised prior to completion of any part of the Work, the Contractor may, if acceptable to Architect, perform such Work in accordance with the revised specifications. The standard

specifications, except as modified in the Specifications for the Project, shall have full force and effect as though printed in the Specifications. Architect will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.

1.2.4 Rules of Document Interpretation

1.2.4.1 In the event of conflict within the Drawings, the following rules shall apply:

a. General Notes, when identified as such, shall be incorporated into other portions of Drawings.

b. Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.

c. Larger scale Drawings shall take precedence over smaller scale Drawings.

d. At no time shall the Contractor base construction on scaled Drawings.

1.2.4.2 Specifications shall govern as to materials, workmanship, and installation procedures.

1.2.4.3 If Contractor observes that Drawings and Specifications are in conflict, Contractor shall, prior to commencing work, notify the Architect in writing for the purposes of obtaining an interpretation of the Contact Documents.

1.2.4.4 In the case of conflict or inconsistencies, the order of precedence shall be as follows:

a. General Conditions take precedence over Drawings and Specifications.

b. Supplemental Conditions take precedence over General Conditions.

c. The Agreement Form shall take precedence over the Supplemental Conditions.

d. In the case of disagreement or conflict between or within Specifications, and Drawings, the more stringent, higher quality, and greater quantity of Work shall apply.

e. Addenda shall take precedence over Drawings and Specifications.

f. General Conditions shall take precedence over Addenda.

g. Drawings and Specifications take precedence over the Soils Report.

1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

The Drawings, Specifications, and other Contract Documents for the Project are the property of the District and/or Architect pursuant Contract requirements between the District and Architect. The Contractor may retain one Contract record set. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim a Copyright in the Drawings, Specifications, and other documents prepared by the Architect. All copies except the Contractor's record set, shall be returned or properly accounted for upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work. The District and/or Architect hereby grants the Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings, Specifications, and other documents prepared for the Project in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the District's property interest or other reserved right.

ARTICLE 2
DISTRICT

2.1 INFORMATION AND SERVICES REQUIRED OF THE DISTRICT

2.1.1 Site Survey

The District will furnish, at its expense, a legal description of the Site and a land survey showing the boundaries of the Site. Contractor shall be responsible for all surveys regarding location of construction, grading and site work.

2.1.2 Soils

When required by the scope of the Project, the District will furnish, at its expense, the services of geotechnical engineers or consultants when reasonably required and deemed necessary by the Architect or as required by local or state codes. Such services, with written reports and appropriate written professional recommendations, may include test boring, test pits, soil bearing values, percolation tests, air and water pollution tests, and ground corrosion and resistivity tests, including necessary operations for determining subsoil, air, and water conditions.

2.1.3 Soils Report Part of the Contract Documents: Contractor Reliance

A soils investigation report has been obtained from test holes at the Site, and such report is incorporated into this Contract and made available for the Contractor's use in preparing its bid and Work under this Contract. Where the Plans and Specifications are more specific and provide more significant structure, systems, reinforcing, thicknesses, or construction methods, the Drawings shall control over the soils report. The soils report is available at the Architect's office for review and it is Contractor's responsibility to ensure that Contractor has reviewed the soils investigation report. Any information obtained from such report or any other information given on Drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only. If, during the course of Work under this Contract, Contractor encounters subsurface conditions which differ materially from those indicated in the soils report, then Contractor shall notify the District within five (5) calendar days of discovery of the condition, and changes to the Contract Price may be made in accordance with Article 7 entitled "Changes in the Work." Contractor agrees that no claim against District will be made by Contractor for damages and hereby waives any rights to damages in the event the Contractor fails to notify District within the five-day period mentioned above.

WARNING: DISTRICT DOES NOT WARRANT THE SOILS AT THE PROJECT SITE. CONTRACTOR HAS REVIEWED AND IS FAMILIAR WITH THE REQUIREMENTS OF THE SOILS INVESTIGATION REPORT. CONTRACTOR UNDERSTANDS THAT PLANS, DRAWINGS AND SPECIFICATIONS SUPERSEDE THE SOILS REPORT IF THERE ARE CONFLICTS. FURTHER, IN ADDITION TO THE INFORMATION IN THE SOILS REPORT, CONTRACTOR HAS CONDUCTED AN INDEPENDENT INVESTIGATION OF THE PROJECT SITE AND THE SOILS CONDITIONS OF THE SITE. DISTRICT DOES NOT WARRANT THE SOILS CONDITIONS OF THE SITE AND CONTRACTOR IS FULLY RESPONSIBLE TO ASCERTAIN SITE CONDITIONS

FOR THE PURPOSES OF DETERMINING CONSTRUCTION MEANS AND METHODS PRIOR TO COMMENCING CONSTRUCTION.

2.1.4 Utilities

2.1.4.1 *Location of Point of Connection*. The locations shown for the point of connection are approximate. It shall be the responsibility of the Contractor to determine the exact location of all service connections.

2.1.4.2 *Regional Notification Center.* Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) business days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the District, and obtain an inquiry identification number from that notification center. See Government Code section 4216.3. No excavation shall be commenced and carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any Subcontractor of the Contractor and the District has been given the identification number by the Contractor. Any damages arising from failure to make appropriate regional notification shall be at the sole risk of Contractor. Contractor shall solely be responsible for any fines, penalties or damages for violation of this Article and Government Code section 4216.6 or 4216.7. Any delays caused by failure to make appropriate regional notification shall be at the sole risk of Contractor and shall not be considered for extension of time pursuant to Article 8.4.

2.1.4.3 *Utilities - Removal and Restoration.* The District has endeavored to determine the existence of utilities at the Site of the Work from the records of the District of known utilities in the vicinity of the Work. The positions of these utilities as derived from such records are shown in the Contract Documents. Thus, the locations of the main or trunklines located on the Drawings are approximate locations and not exact.

No excavations were made to verify the locations shown for underground utilities. Other than the main or trunkline, which the District has endeavored to locate on the Plans, service connections or laterals to these utilities may not be shown on the Plans. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing work which could result in damage to such utilities. The Contractor shall immediately notify the District's representative as to any utility main or trunkline discovered by Contractor in a different position than provided by the Regional Notification Center. With respect to main or trunklines, Contractor is to immediately notify District if the location is substantially different than as shown in the Contract Documents.

Contractor shall coordinate its Work with all utilities, including, but not limited to electricity, water, gas and telephone and meet with said utilities prior to the start of any work. Contractor shall show timing of all utility coordination activities under the Scheduling requirements of Article 8.

2.1.4.4 *Other Utilities.* In case it should be necessary to remove, relocate, or temporarily maintain a utility because of interference with the Work, the work on the utility shall be performed and paid for as follows:

When it is necessary to remove, relocate or temporarily maintain a service connection, the cost of which is not required to be borne by the owner of the service connection, the Contractor shall bear all expenses incidental to the work on the service connection. The work on the service connection shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the service connection has the option of doing such work with his own forces or permitting the work to be done by the Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is in the position shown on the Plans, the cost of which is not required to be borne by the owner thereof, the Contractor shall bear all expenses incidental to the work on the utility. The work on the utility shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with his own forces or permitting the work to be done by the Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is not shown on the Plans or is in a position different from that shown on the Plans and were it in the position shown on the Plans would not need to be removed, relocated, or temporarily maintained, and the cost of which is not required to be borne by the owner thereof, the District will make arrangements with the owner of the utility for such work to be done at no cost to the Contractor, or will require the Contractor to do such work in accordance with Article 7 or will make changes in the alignment and grade of the Work to obviate the necessity to remove, relocate, or temporarily maintain the utility. Changes in alignment and grade will be ordered in accordance with Article 7 herein.

No representations are made that the obligations to move or temporarily maintain any utility and to pay the cost thereof is or is not required to be borne by the owner of such utility, and it shall be the responsibility of the Contractor to investigate to find out whether said cost is required to be borne by the owner of the utility.

The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work and for the purpose of maintaining and making repairs to their property.

2.1.5 Existing Utility Lines; Removal, Relocation

2.1.5.1 *Main or Trunkline Facilities*. If the Contractor while performing the Contract discovers utility facilities not identified in the Contract Documents, Contractor shall notify the District and utility in writing prior to commencing work.

The owner of the public utility shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price.

The Contractor shall exercise reasonable care and shall be compensated by the District for the actual verified field costs of locating, and removing, relocating, protecting or temporarily maintaining such main or trunkline utility facilities located in a substantially different location than in the Plans and Specifications, and for equipment in use on the project necessarily idled during such work. This Work shall be performed in accordance with Article 7 of these General Conditions.

2.1.5.2 *Assessment*. Nothing in these subparagraphs shall be deemed to require the District to indicate the presence of existing service laterals or appurtenances whenever the presence of such

utilities on the Site can be inferred from the presence of other visible facilities, such as buildings, or meter junction boxes on or adjacent to the Site and could be inferred from the Main or Trunkline shown on the Drawings.

2.1.5.3 *Notification*. If the Contractor, while performing Work under this Contract, discovers utility facilities not identified by the District in the Contract Documents. Contractor shall, within five (5) days, notify the District and the utility in writing. If Contractor fails to notify the District within forty eight hours after discovery of any utility facilities not identified by District in the Contract Documents, Contractor waives all rights to be compensated for any extra Work or damages resulting from such discovered utilities.

2.1.6 Easements

District shall secure and pay for easements for permanent structures or permanent changes in existing facilities, if any, unless otherwise specified in the Contract Documents.

2.2 DISTRICT'S RIGHT TO CARRY OUT THE WORK DUE TO PARTIAL DEFAULT IN A SPECIFIC SEGREGATED AREA OF WORK (48 HOUR NOTICE TO CURE AND CORRECT)

If the Contractor Defaults or neglects to carry out the Work in accordance with the Contract Documents, the District may provide forty-eight (48) hour written notice to cure (a shorter period of time in the case of Emergency or a critical path delay as defined in Article 2.2.1) Contractor's Partial Default in a specific segregated area of work. The District's right to issue a Partial Default of the Contractor's Work and take over that segregated area of Work includes, but is not limited to:

1. Failure to supply adequate workers on the entire Project or any part thereof;

2. Failure to supply a sufficient quantity of materials;

3. Failure to perform any provision of this Contract;

4. Failure to comply with safety requirements, or due to Contractor is creation of an unsafe condition;

5. Cases of bona fide emergency;

6. Failure to order materials in a timely manner;

7. Failure to prepare Deferred Approval items or Shop Drawings in a timely manner;

8. Failure to comply with Contractor's Baseline or Update Schedule, meet critical Milestones which would result in a delay to the critical path, or delay the Contract Time;

9. Failure to comply with the Subletting and Subcontracting Fair Practices, Public Contract Code section 4100, et seq.

10. Failure to meet the requirements of the Americans with Disabilities Act;

11. Failure to complete Punch List work;

12. Failure to proceed on an Immediate Change Directive

13. Failure to correct a Notice of Deviation

If during the forty eight (48) hour period, the Contractor fails to Cure and correct the deficiency noted in the 48 hour notice of Partial Default with diligence and promptness, the District may correct such deficiencies without prejudice to other remedies the District may have, including a Termination for Cause as set forth in Article 14. If there are inadequate funds remaining the Project balance or in the Retention Escrow to address at least 150% of the costs set forth in the Article 2.2 notice, the District may copy the Surety on the written notice of Partial Default. If a notice to the Surety is provided, except in the cases of emergency or critical path delay, the Surety has the option to take over and complete the Work described in the written notice if Surety personally delivers notice to District that it intends to perform such work. In the case where written notice has been provided, the District shall allow Surety seven (7) days to perform the Work.

2.2.1 Service of Notice of Partial Default with Right to Cure

A written notice of Partial Default and right to cure under Article 2.2 ("Article 2.2 Notice" or "Notice of Partial Default") shall be served by e-mail (with a copy provided by regular mail) to the e-mail address provided on the Bid submitted and copied to the Project Superintendent.

2.2.2 Shortened Time for Partial Default in the Case of Emergencies.

In an Emergency situation, the District may correct any of the deficiencies described in Article 2.2 without prejudice to other remedies by providing service of written notice of Emergency requiring a shortened time for Partial Default specifying the time given to cure, if any.

2.2.3 Shortened Time for Partial Default in the Case of Critical Path Delay

In the case of critical path delay, the District may correct any of the deficiencies described in Article 2.2 without prejudice to other remedies providing service of written notice of critical path delay to the Contractor with a specific description of the critical path delay items noting the line item or area of Work that is on the critical path and prescribe the length of shortened time to cure, if any.

2.2.4 Written Notice of Partial Default to be Deducted by Deductive Change Order

The District shall have the right to determine the reasonable value of the Article 2.2 Partial Default Work, or if there is an actual value for the Work, shall use that value and issue a Deductive Change Orders under Article 7.7.4

ARTICLE 3
THE CONTRACTOR

3.1 SUPERVISION AND CONSTRUCTION PROCEDURES

3.1.1 Contractor

The Contractor shall continually supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures; and shall coordinate all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. The Contractor shall not perform the Work without utilizing the Contract Documents or, where required, approved Submittals, Shop Drawings, or samples for any such portion of the Work. If any of the Work is performed by contractors retained directly by the District, Contractor shall be responsible for the coordination and sequencing of the work of those other contractors so as to avoid any impact on the Project Schedule pursuant to the requirements of Article 6 and Article 8. Specific duties of the Contractor shall include those set out in Section 43 of Title 21 of the California Code of Regulations and Section 4-343 of Title 24 of the California Code of Regulations. These duties include, but are not limited to the following:

3.1.1.1 *Responsibilities*. It is the duty of the Contractor to complete the Work covered by his or her Contract in accordance with the approved Plans and Specifications. The Contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of their duties.

3.1.1.2 Performance of the Work. The Contractor shall carefully study the approved Plans and Specifications and shall plan its schedule of operations well ahead of time. If at any time it is discovered that work is being done which is not in accordance with the approved Plans and Specifications, the Contractor shall correct the Work immediately.

3.1.2 Contractor Responsibility to Study the Plans and Specifications

All inconsistencies or timing or sequences which appear to be in error in the Plans and Specifications shall promptly be called to the attention of the Architect or, Engineer, for interpretation or correction. Local conditions which may affect the structure shall be brought to the Architect's attention at once. In no case, shall the instruction of the Architect be construed to cause work to be done which is not in conformity with the approved Plans, Specifications, change orders, construction change documents, and as required by law. (See Title 24, Section 4-343)

3.1.3 All Work Under the Direction of Inspector

Pursuant to Title 24 requirements, the Contractor shall not carry on Work except with the knowledge of the Inspector. (See Title 24 generally)

3.1.4 Contractor to Establish Timing and Protocol with Inspector

Contractor shall establish a protocol for requesting inspection with Inspector so as to not delay the Work and provide adequate time for the Inspector to perform inspection. If such a protocol is not established ahead of time, Inspector may utilize the time criteria set by Title 24 of 48 hours in advance of

submitting form DSA 156 for each new area. DSA requirements under PR 13-01 specifically gives the Special Inspector fourteen (14) days to post to the DSA website. Contractor is responsible for delays and for failure to plan.

For some Projects, there may be a need to incrementally install certain assemblies. It is up to Contractor to identify areas and assemblies that may be constructed incrementally. Contractor must identify and establish incremental areas of construction and establish protocols with Inspector for DSA 152 approvals so they may be presented to DSA. (See PR-13 item 1.17 for further discussion)

3.1.5 Verified Reports

The Contractor shall make and submit to the office from time to time, verified reports as required in Title 24 Section 4-366. As part of the Close-Out of the Project (see Article 9.9), Contractor shall be required to execute a Form 6-C as required under Title 24 Sections 4-343.

Contractor shall fully comply with any and all reporting requirements of Education Code sections 17315, et seq., in the manner prescribed by Title 24, as applicable.

3.1.6 Contractor Responsibility

The Contractor shall be responsible to the District for acts and omissions of the Contractor's employees, Subcontractors, material and equipment suppliers, and their agents, employees, invitees, and other persons performing portions of the Work under direct or indirect contract with the Contractor or any of its Subcontractors.

3.1.7 Obligations not Changed by Architect's Actions

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.1.8 Acceptance/Approval of Work

The Contractor shall be responsible to determine when any completed portions of the Work already performed under this Contract or provided pursuant to Article 6 are suitable to receive subsequent Work thereon.

3.2 SUPERVISION

3.2.1 Full Time Supervision

Unless personally present on the Project site where the Work is being performed, the Contractor shall keep on the Work at all times during its progress a competent, English speaking construction Superintendent satisfactory to the District. The Superintendent shall be present on a full-time basis, shall be dedicated exclusively to the Project and shall not share superintendency duties with another project or job. The Superintendent shall not be replaced except with written consent of the District. The Superintendent shall represent the Contractor in its absence and shall be fully authorized to receive and fulfill any instruction from the Architect, the Inspector, the District or any other District Representative

(including CM in the cases where the District has a CM representative). All Requests for Information shall be originated by the Superintendent and responses thereto shall be given to the Superintendent. No Work shall begin on any day by any Subcontractor or other person on the Project site until the Superintendent has arrived, or shall any Work continue during the day after the Superintendent has departed from the Project site. The Superintendent shall have authority to bind Contractor through the Superintendent's acts. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be binding on the Contractor. Before commencing the Work, Contractor shall give written notice to District (and CM representative) and Architect of the name and a Statement of Qualifications of such superintendent. Superintendent shall not be changed except with written consent of District, unless a superintendent proves to be unsatisfactory to Contractor and ceases to be in its employ, in which case, Contractor shall notify District and Architect in writing. Contractor shall provide a replacement superintendent approved by the District prior to performing additional work.

3.2.2 Staff

Notwithstanding other requirements of the Contract Documents, the Contractor and each Subcontractor shall: (1) furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision, and superintendence of its portion of the Work; (2) organize the procurement of all materials and equipment so that the materials and equipment will be available at the time they are needed for the Work; and (3) keep an adequate force of skilled and fit workers on the job to complete the Work in accordance with all requirements of the Contract Documents.

3.2.3 Right to Remove

District shall have the right, but not the obligation, to require the removal from the Project of any superintendent, staff member, agent, or employee of any Contractor, Subcontractor, material or equipment supplier.

3.3 LABOR AND MATERIALS

3.3.1 Contractor to Provide

Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, material, equipment, tools, construction equipment and machinery, water, heat, air conditioning, utilities, transportation, and other facilities, services and permits necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.3.2 Quality

Unless otherwise specified, all materials and equipment to be permanently installed in the Project shall be new and shall be of the highest quality or as specifically stated in the Contract Documents. The Contractor shall, if requested, furnish satisfactory evidence as to kind and quality of all materials and equipment within ten (10) days of a written request by the District, including furnishing the District with bona fide copies of invoices for materials or services provided on the Project. All labor shall be performed by workers skilled in their respective trades, and shall be of the same or higher quality as with the standards of other school construction.

3.3.3 Replacement

Any work, materials, or equipment, which do not conform to these requirements or the standards set forth in the Contract Documents, may be disapproved by the District, in which case, they shall be removed and replaced by the Contractor at no additional cost or extension of time to the District.

3.3.4 Discipline

The Contractor shall enforce strict discipline and good order among the Contractor's and Subcontractor's employees, and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. As used in this subsection, "unfit" includes any person who the District concludes is improperly skilled for the task assigned to that person, who fails to comply with the requirements of this article, or who creates safety hazards which jeopardize other persons and/or property.

3.3.5 Fingerprinting (Applicable at the time Project is Occupied and on all Projects where Workers will come in Contact with Pupils, such as Modernization Projects)

If applicable, Contractor shall comply with the applicable provisions of Education Code section 45125.1 in a method as determined by the District. Pursuant to Education Code section 45125.1, Contractor shall either conduct criminal background checks of all employees of Contractor assigned to the Project site, and shall certify that no employees who have been convicted of serious or violent felonies, as specified in Education Code section 45125.1, will have contact with pupils, by utilizing the Certification Regarding Background Checks and the corresponding Attachment "A" as found in the Contract Documents or shall be separated by a physical barrier from students.

If it is determined that Contractor must provide certification of employees, as part of such certification, Contractor must provide the District with a list of all employees providing services pursuant to this Agreement, and designate which sites such employees will be assigned. In performing the services set forth in this Agreement, Contractor shall not utilize any employees who are not included on the above-referenced list.

At District's sole discretion, District may make a finding, as authorized under Education Code section 45125.1, that Contractor's employees will have only "limited contact" with pupils. Contractor's failure to comply with this law shall be considered a material breach of this Agreement upon where this Agreement may be terminated, at District's sole discretion, without any further compensation to Contractor.

In the case of new construction Projects where there are no students, if the Project Schedule provides for Beneficial Occupancy or portions of the Project or if the Project should be delayed, then Contractor, at no additional costs, shall meet the requirements of either fingerprinting or providing a physical barrier as required by the District.

3.3.6 Noise, Drugs, Tobacco, and Alcohol

Contractor shall take all steps necessary to insure that employees of Contractor or any of its Subcontractors' employees do not use, consume, or work under the influence of any alcohol, tobacco or illegal drugs while on the Project. Contractor shall further prevent any of its employees or its Subcontractor employees from playing any recorded music devices or radios or wearing any radio headphone devices for entertainment while working on the Project. Likewise, Contractor shall prevent its employees or

Subcontractor's employees from bringing any animal onto the Project. Contractors shall not violate any written school policies.

3.3.7 Delivery of Material

Contractor shall place orders for materials or equipment so that the Work may be completed in accordance with the Construction schedule for the Work as set forth in Article 8 of this Agreement. Contractor shall, upon demand from the Architect, furnish to the Architect documentary evidence including, but not limited to purchase orders, invoices, bills of materials, work orders and bills of lading, showing that orders have been placed. Contractor shall have a system to receive materials and to ensure that the proper materials are being delivered, including in the case of critical materials to the Project, checking the delivery against Shop Drawings and ensuring that the materials meet the requirements of not only the Plans and Specifications, but also the approved Shop Drawings and Submittals and in conformance with Contractor's plan for delivery of materials (including but not limited to Contractor's representations in the Schedules for the Project and Contractor's equipment and materials schedule under Article 3.7.2.2). Contractor shall be responsible for all costs of accepting non-conforming materials delivered to the Project given Contractor's responsibilities and system for acceptance of deliveries. Contractor shall notify Inspector and District Representative (including CM) as early as possible, in writing, of the delivery of materials for the Project. The deliveries shall include documentation identifying the shipment sufficiently so that the Inspector, Architect or District Representative (including CM) may review the materials that are received. Under no circumstances shall materials be delivered to the Project site that are meant for another Project.

3.3.8 Liens and Other Security Interests of Subcontractors and Material Suppliers

No material, supplies, or equipment for the Work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by it, to District free from any claims, security interests, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any Work covered by this Contract shall have any right to place a lien upon the premises or any improvement or appurtenance thereof, except that Contractor may install metering devices or other equipment of a utility company or political subdivision, title to which is commonly retained by the utility company or political subdivision. In event of installation of any such metering device or equipment, Contractor shall advise District as to its owner within five (5) days of such installation in writing, prior to making the installation.

Contractor agrees to indemnify, defend and hold the District harmless from any liens, stop notices, or assertion of security interests, including judgments and levies. If after written notice Contractor fails to address the lien, stop notice, or other security interest, the District may proceed to address the lien, stop notice or claim and seek reimbursement from Contractor.

3.3.9 Title to Materials

The title to new materials or equipment for the Work of this Contract shall remain with Contractor until incorporated in the Work of this Contract until final acceptance of the Project; no part of said materials shall be removed from its place of storage, and Contractor shall keep an accurate inventory of all said materials and equipment in a manner satisfactory to the District or its authorized representative.

Responsibility for materials remains with Contractor and Contractor shall replace materials in case of loss. District similarly may pay for materials stored off site, but Contractor shall remain responsible for the materials that are stored off site.

3.3.10 Assemblies

For all material and equipment specified or indicated in the Drawings, the Contractor shall provide all labor, materials, equipment, and services necessary, (including engineering as specifically required with Shop Drawings or Deferred Approvals) for complete assemblies and complete working systems. Incidental items not indicated on the Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized in the Contract Documents in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and Specifications.

3.3.11 Noise Control

The Contractor shall be responsible for the installation of noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction equipment noise is subject to the control of the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). If school is in session at any point during the progress of the Project, and, in the District's reasonable discretion, the noise from such Work disrupts or disturbs the students or faculty or the normal operation of the school, at the District's request, the Contractor shall schedule the performance of all such Work around normal school hours or make other arrangements so that the Work does not cause such disruption or disturbance. There are specific periods of testing at operational schools and it is critical that Contractor control noise during periods of testing. In no event shall Contractor have a right to receive additional compensation or an extension to the Contract time as a result of any such rescheduling or the making of such arrangements. These controls shall be implemented during site preparation and construction. All noise related issues, including school operations, and noise during testing should be detailed in the Schedule provided pursuant to Article 8

3.4 WARRANTY

The Contractor warrants to the District and Architect that material and equipment furnished under the Contract will be of the highest quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor's warranty to District includes, but is not limited to, the following representations:

3.4.1 In addition to any other warranties provided elsewhere, Contractor shall, and hereby does, warrant all Work after the date of Notice of Completion of Work by District and shall repair or replace any or all such Work, together with any other Work, which may be displaced in so doing that may prove defective in workmanship or materials within a one (1) year period from date of Final Completion which shall be no later than the final date of Punch List as noted at Article 9.11) without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

3.4.2 In the event of failure of Contractor to comply with above mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of Contractor who hereby agrees to pay costs and charges therefore immediately on demand.

3.4.3 If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District's requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or attention which shall be charged against Contractor. Such action by the District will not relieve the Contractor of the guarantee provided in this Article or elsewhere in this Contract.

3.4.4 This Article does not in any way limit the guarantee on any items for which a longer warranty is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish District all appropriate guarantee or warranty certificates upon completion of the project.

3.5 TAXES

Contractor will pay all applicable Federal, State, and local taxes on all materials, labor, or services furnished by it, and all taxes arising out of its operations under the Contract Documents. District is exempt from Federal Excise Tax, and a Certificate of Exemption shall be provided upon request.

3.6 PERMITS, FEES AND NOTICES

3.6.1 Payment

The Contractor shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are necessary after execution of the Contract and are legally required by any authority having jurisdiction over the Project, except those required by the Division of the State Architect (DSA). District shall be responsible for all testing and inspection as required by the DSA on-site or within the distance limitations set forth in Article 13.5.2, unless a different mileage range is specified in the Supplemental Conditions.

3.6.1.1 *DSA Fees*. DSA policy is to charge CCD review fees for processing and approval of changes in the Plans and Specifications through the Construction Change Document process. Contractor is specifically directed to the current DSA IR A-30 which provides fee structure and charges that will be incurred for proceeding with respect to the CCD process, a process that must be followed for each change in the Plans and Specifications.

3.6.2 Compliance

The Contractor shall comply with and give notices required by any law, ordinance, rule, regulation, and lawful order of public authorities bearing on performance of the Work. Specifically, the Division of State Architect provides State oversight of the Project and enforcement of Title 24 rules and regulations. Contractor is directed to the DSA website. There will be local governmental oversight from City, County or both. Finally, Regional Water Quality Control Board, State Fire Marshall, local fire marshal, Department of Industrial Relations, Department of Labor Standards Enforcement, and Air Quality

Management District (Local and State) are some of the agencies that provide oversight and may require specific permits, fees, or provide oversight over the Project. Contractor represents understanding and specialized knowledge of the rules governing school districts and Contractor shall maintain compliance over the applicable rules and will file all documents required in order to ensure compliance with State, local, and other rules that apply to the Project.

3.6.3 Responsibility

The Contractor shall perform all Work in conformance with every law, statute, ordinance, building code, rule or regulation. The Contractor shall assume full responsibility for such Work and shall bear the attributable cost of correction or project delay.

Pursuant to Title 24 Section 4-343(b):

> "Contractor shall carefully study the approved Plans and Specifications and shall plan a schedule of operations well ahead of time.... All inconsistencies or items which appear to be in error in the Plans and Specifications shall be promptly called to the attention of the architect or registered engineer, through the inspector, for interpretation or correction."

To help Contractor plan its operations, Contractor is directed to study the current version of the DSA 152 Inspection Card Manual identifying the exact steps the Inspector is to follow in the review and sign off process for the DSA 152. The DSA 152 Inspection Card Manual provides specific detail as to the order of operations, review items and compliance items beyond the Specifications and Plans which are reviewed for DSA compliance. The most current version of this manual is located on DSA's website.

Contractor is also specifically directed to the time periods for posting of Special Inspection Reports and Inspector Notifications under DSA PR 13-01 since the timing of Inspection is not a Governmental Entity related delay.

3.7 SUBMITTALS REQUIRED AT THE COMMENCEMENT OF THE PROJECT

3.7.1 Requirements Within Ten (10) Calendar Days

Within ten (10) calendar days after Notice to Proceed, Contract shall submit the following:

3.7.1.1 Detailed Schedule of Values (See Article 9.2)

3.7.1.2 Submittal Listing and Schedule for Submittals

3.7.1.3 Critical Path Baseline Schedule (See Article 8)

3.7.2 Requirements Within Thirty-Five (35) Calendar Days

Within thirty-five (35) calendar days after Notice to Proceed, Contractor shall submit the following:

3.7.2.1 *All Submittals for the Project* except those specifically agreed upon by District and Architect, in writing, and shall be specifically incorporated into the Submittal section of the

Schedule so as to not delay the Work. The agreement to allow a later Submittal does not mean that Article 3.3.7 is waived. Contractor shall order materials and ensure prices are honored and secured for the Project.

a. Structural Steel may be included as a later Submittal than 35 days if Structural Steel is a significant portion of the Work, at least one or some of the Project is a structural steel structural system, or as specifically agreed upon by the Architect or District.

b. It is specifically agreed that submissions of structural steel Submittals shall not be piecemeal (unless some portion is requested separately by the District or Architect), shall provide complete designs, shall be stamped by the structural steel Subcontractor, Contractor, and structural steel Subcontractor's structural engineer at time of submission and as further addressed in Article 3.9.

c. In no case shall the submission of structural steel Drawings delay the critical path for the schedule. If a Milestone is provided for submission of complete structural steel Shop Drawings then the date shall be no later than as set forth in the Milestone

3.7.2.2 *Exceptions to Submittal Within Thirty-Five (35) Days by Written Agreement*. A written request detailing the specific reasons for a submission later than 35 days due to complexity of design or non-critical path status of the Submittal shall be submitted at the time the Baseline Schedule is submitted. The Baseline Schedule shall not include a delayed Submittal until written agreement is provided. In addition to the request for providing a Submittal after the thirty-five (35) day period, a copy of the Contract with the Subcontractor who shall be performing the Submittal, a written statement from the Subcontractor verifying that work has commenced on the Submittal and providing Subcontractor's own schedule of Milestones and completion dates, and a corresponding Submittal designation in the Schedule as required under Article 8. Approval of a delayed Submittal shall not result in any increase in the Contract Price or result in an extension of time for the completion of the Project.

3.7.2.3 *Piecemeal Submissions of Submittals*. Piecemeal Submittals mean providing portions of Shop Drawings or Submittals as they are being completed. The submission of piecemeal Submittals results in the appearance of a submission when there is inadequate information for the Architect or Engineer to adequately review a submission. Piecemeal differs from submission of complete buildings or phases of buildings or complete assemblies. The Architect may agree to allow submission of single buildings or areas as long as the Submittals are complete. .

3.8 DOCUMENTS, SAMPLES, AND COMPUTER AT THE SITE

The Contractor shall maintain at the Site for the District one current copy of the California Building Code, Titles 19 and 24 of the California Code of Regulations, any other document required by DSA, and one record copy of the Drawings, Specifications, Addenda, Change Orders, and other Modifications, in good order and marked currently to record changes and selections made during construction. In addition, the Contractor shall maintain at the Site approved Shop Drawings, Product Data, Samples, and similar required Submittals. These documents shall be available to the Architect and shall be delivered to the Architect for delivery to the District upon completion of the Work.

Contractor shall have an operational computer with internet access so Contractor can review and post documents as required for the Project, including but not limited to the filing and posting of DSA required documents for the Project.

Contractor shall be prepared to review documents posted to the DSA Project website.

3.9 SUBMITTALS INCLUDING SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

3.9.1 Definitions

3.9.1.1 *Deferred Approvals*. Approval of certain aspects of the construction may be deferred until the construction Contract has been awarded. To facilitate the design process, DSA grants Deferred Approval to the design and detailing of certain elements of the Project at the request of the Architect or Engineer of Record. Design elements that may be deferred may include, but are not limited to access floors, bleachers, elevator guide rails and related elevator systems, exterior wall systems - precast concrete, glass fiber reinforced concrete, etc., skylights, window wall systems, storefronts, stage rigging, and other systems as noted in the Contract Documents. (Also see Article 1.2.2.2 and 3.9.3)

3.9.1.2 *Shop Drawings.* The term "Shop Drawings" as used herein means Drawings, diagrams, equipment or product schedules, and other data, which are prepared by Contractor, Subcontractors, manufacturers, suppliers, or distributors illustrating some portion of the Work, and includes: illustrations; fabrication, erection, layout and setting Drawings; manufacturer's standard Drawings; schedules; descriptive literature, instructions, catalogs, and brochures; performance and test data including charts; wiring and control diagrams; and all other Drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and their position conform to the requirements of the Contract Documents.

3.9.1.3 *Manufactured* applies to standard units usually mass-produced, and "Fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop Drawings shall: establish the actual detail of all manufactured or Fabricated items, indicate proper relation to adjoining work, amplify design details of mechanical and electrical systems and equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.

3.9.1.4 *Submittals* is a term used interchangeably and sometimes refers to Shop Drawings, Product Data, and samples since all Subcontractor submissions are tracked in a Submittal Log and may include any of the noted items. However, generally, a Submittal is a manufacturer's product information and Product Data including description, characteristics, size, physical characteristics, and requirements to prepare the jobsite for receiving of the particular manufactured item.

3.9.1.5 *Samples*. The term "samples" as used herein are physical examples furnished by Contractor to illustrate materials, equipment, or quality and includes natural materials, Fabricated items, equipment, devices, appliances, or parts thereof as called for in the Specifications, and any other samples as may be required by the Architect to determine whether the kind, quality, construction, finish, color, and other characteristics of the materials, etc., proposed by the Contractor conform to the required characteristics of the various parts of the Work. All Work shall be in accordance with the approved samples.

3.9.2 Shop Drawings.

3.9.2.1 *When Shop Drawings Are Required.* Shop Drawings are required for prefabricated components and for installation and coordination of these prefabricated components into the Project. In addition, Shop Drawings, are prepared to address the actual size and installation of components from various Subcontractors and provides an opportunity for the Contractor to coordinate and address conflicts between the subcontracting trades. In some cases, each Subcontractor or trade will provide Shop Drawings in a BIM format or other format as agreed by District.

3.9.2.2 *Purpose for Shop Drawings.* Shop Drawings are the Contractor's manufacturer, Subcontractor, supplier, vendor or the Contractor's detailed drawings showing particularized method for assembly, specifics to a manufacturer, manufacturer component installation requirements, specifics as to a manufactured item, alterations to a manufactured, a custom created item, or drawn version of more detailed information expanding on the Architect's design shown in the Contact Documents. The Shop Drawings address the appearance, performance, size, weight, characteristics and prescriptive descriptions associated with the Contractor or Contractor's Subcontractor's plan for installation or assembly based on the design in the Specifications and Contract Documents. The Shop Drawing often is more detailed than the information shown in the Contract Documents to give the Architect and Engineer the opportunity to review the fabricator's version of the product (along with particulars specific to that particular product), prior to fabrication. References to the Contract Documents, Construction Documents, Drawings, Plans, and Specifications assist the Architect and Engineer in their review of the Shop Drawings. Attachment of manufacturer's material Specifications, "catalog cut sheets," and other manufacturer's information may be provided to accompany Shop Drawings. Because Shop Drawings facilitate the Architect's and Engineer's approval of the system, they should be as clear and complete as possible so they may be reviewed by Architect or Engineer for the Project.

3.9.2.3 *Shop Drawing Requirements.* The Contractor shall obtain and submit with Shop Drawings all seismic and other calculations and all Product Data from equipment manufacturers. "Product Data" as used herein are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

3.9.2.4 *Not a Reproduction of Architectural or Engineering Drawings.* The Shop Drawings are not a reproduction of the architectural or engineering Drawings. Instead, they must show more detail than the Construction Documents and details the fabrication and/or installation of the items to the manufacturer's production crew or Contractor's installation crews.

3.9.2.5 *Shop Drawings Engineering Requirements*: Some Shop Drawings require an engineer stamp to be affixed on the Drawings and calculations. In such cases, a current and valid engineering stamp shall be affixed by a California registered engineer. No out of State engineers shall stamp Shop Drawings. (See DSA IR A-18). In most cases, an engineer means California registered mechanical, structural, electrical or plumbing engineer. California Registered Civil Engineers will not be accepted for structural details unless specifically approved by DSA.

3.9.2.6 *DSA Approvals Required Prior to Work*. No work on a Shop Drawing that requires DSA approval may proceed until DSA approval is received. Contractor has provided DSA approval time and allowed adequate time for corrections in Contractor's Schedule as required pursuant to Article 8.

3.9.2.7 *Shop Drawing Identification.* All Shop Drawings must be properly identified with the name of the Project and dated, and accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as "clouding" all qualifications, departures, or deviations from the Contract Documents. Shop Drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor.

3.9.3 Deferred Approvals

Deferred approvals shall be submitted and processed to ensure all DSA and other governmental approvals are secured so as to not delay the Project. There may be additional requirements for Deferred Approvals at Division 1 of the Specifications. All Deferred Approvals shall be prepared by Contractor or Contractor's agent early enough so as to not delay the Project. Contractor is aware that Title 24 California Code of Regulations Section 4-317 have specific requirements for Deferred Approval as to governing agencies and as to the Architect and Engineer for the Project. As a result, any delay associated with the time for approval by applicable agencies or by the Architect or Architect's consultants shall be Contractor's. Contractor is required to comply with inclusion of Deferred Approvals in the Schedule as required under Article 3.9.6*DSA Approvals Required Prior to Work.* No work on a Deferred Approval item may proceed on the components until DSA approval is received. Contractor has provided DSA approval time and allowed adequate time for any DSA revisions in Contractor's Schedule as required pursuant to Article 8.

3.9.4 Submittals and Samples

3.9.4.1 *Information Required With Submittals*: Manufacturer, trade name, model or type number and quantities: Information provided must be of sufficient detail to allow Architect and Engineer to compare the submitted item with the specified products and acceptable products listed, in the Specifications and addenda.

3.9.4.2 *Description of Use and Performance Characteristics*: Information should be furnished describing the normal use and expected performance of the product. The Architect and Contractor review this information to confirm that the product is appropriate for the intended use.

3.9.4.3 *Size and Physical Characteristics:* The size and physical characteristics, such as adjustment capabilities, which is reviewed by both the Contractor and Architect. The Contractor has the most available information for comparing adjoining materials and equipment. The Contractor also needs to know the size and weight of the equipment for lifting and handling considerations.

3.9.4.4 *Finish Characteristics:* The Architect reviews the available finishes and selects the appropriate finish, if the finish was not previously specified in the documents. The Contractor should confirm that finish requirements in the Specifications are being met by the product.

3.9.4.5 *Contractor Responsible for Jobsite Dimensions*: Some material is custom-Fabricated to job conditions, requiring dimensions from the jobsite. These jobsite dimensions are provided by the Contractor as part of the Contractor's responsibilities for the Project and shall be provided prior to release of the product for manufacture. Contractor shall not rely on Architect or Engineers to provide jobsite dimensions.

3.9.4.6 *Full Range of Samples Required (When Specific Items Not Specified).* Except in cases where the exact color and type of item is specified since the District is utilizing items Standardized or pre-selected by District, the full range of color, graining, texture, or other characteristics are anticipated for review in finished products, a sufficient number of samples of the specified materials shall be furnished by the Contractor to indicate the full range of characteristics which will be present in the finished products. Products delivered or erected without Submittal and approval without providing a full range of samples shall be subject to rejection. Except for range samples, and unless otherwise called for in the various sections of the Specifications or Specification Section 1, samples shall be submitted in duplicate.

3.9.4.7 *Labeling of Samples.* All samples shall be marked, tagged, or otherwise properly identified with the name of the submitting party, the name of the Project, the purpose for which the samples are submitted and the date.

3.9.4.8 *Transmittal letter.* All samples shall be accompanied by a letter of transmittal containing similar information, together with the Specification section number.

3.9.4.9 *Labels and Instructions.* All samples of materials shall be supplied with the manufacturer's descriptive labels and application instructions. Each tag or sticker shall have clear space for the review stamps of Contractor and Architect.

3.9.4.10 *Architect's Review.* The Architect will review and, if appropriate, approve submissions and will return them to the Contractor with the Architect's stamp and signature applied thereto, indicating the timing for review and appropriate action in compliance with the Architect's (or District's) standard procedures. In the cases where a CM is hired by the District, CM may be the party that receives and performance logging and initial processing of the Samples. CM may, in some cases, reject samples that are not in conformance with Contract requirements.

3.9.5 Submittal Submission Procedure

3.9.5.1 *Transmittal Letter and Other Requirements.* All Submittals must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as "clouding" on the submissions, all qualifications, departures, or deviations from the Contract Documents. Shop Drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor. Refer to Division 1. In the case where a CM is hired on the Project, the CM may be designated to receive the Submittals for the Project, log the Submittals, and in some cases reject Submittals that do not conform to Contract requirements. Submittal Procedures for further information.

3.9.5.2 *Copies Required.* Each Submittal shall include one (1) legible, reproducible (if electronic is available, electronic copies shall also be provided) and five (5) legible prints of each drawing or schedule, table, cut sheet, etc., including fabrication, erection, layout and setting drawings, and such other drawings as required under the various sections of the Specifications, until final acceptance thereof is obtained. Subcontractor shall submit copies, in an amount as requested by the Contractor, of: (1) manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; (2) wiring diagrams and controls;

(3) schedules; (4) all seismic calculations and other calculations; and (5) other pertinent information as required by the District or Architect. (See also Division 1)

3.9.5.3 *Corrections.* The Contractor shall make all corrections required by Architect, District or CM and shall resubmit, as required by Architect or CM, corrected copies of Shop Drawings or new samples until approved. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than one (1) re-review of required Submittals of Shop Drawings, Product Data, or samples are subject to charge to the Contractor pursuant to Article 4.5.

3.9.5.4 *Approval Prior to Commencement of Work.* No portion of the Work requiring a Shop Drawing or sample submission or other Submittal shall be commenced until the submission has been reviewed by Contractor and Architect (and CM, if applicable) and approved by Architect (and CM where applicable) unless specifically directed in writing by the Architect. All such portions of the Work shall be in accordance with approved Shop Drawings and samples.

3.9.5.5 *District's Property.* All Submittals, Shop Drawings, computer disks, BIM modeling information, clash checks, schedules, annotated Specifications, samples and other Submittals shall become the District's property upon receipt by the District or Architect.

3.9.6 Schedule Requirements for Submittals

Contractor shall obtain and shall submit all required Submittals (i.e. Shop Drawings, Deferred Approvals, Samples, etc.), in accordance with Contractor's "Schedule for Submission of Shop Drawings and Samples" as required in the scheduling portion of the General Conditions at Articles 8 and the Specifications (as long as the Specifications do not conflict with General Conditions. In the case of conflict, the conflicting provision shall be controlled by the General Conditions and the remaining Specifications sections shall be interpreted as if the general conditions language is inserted) with such promptness as to cause no delay in its own Work or in that of any other contractor or subcontractor but in no event later than thirty five (35) days after the Notice to Proceed is issued except in the specific cases noted as an exception under Article 3.7.2.1. No extensions of time will be granted to Contractor or any Subcontractor because of its failure to have Shop Drawings and samples submitted in accordance with Division 1 and the Schedule. Each Subcontractor shall submit all Shop Drawings, samples, and manufacturer's descriptive data for the review of the District, the Contractor, and the Architect through the Contractor.

3.9.6.1 *Consideration of Schedule.* Contractor has considered lead times, DSA or other agency governmental review times, Architect or Engineer review times, manufacturing seasons, and specific long lead procurement concerns for all submittals for the Project.

3.9.7 General Submittal Requirements

3.9.7.1 *Contractor Submittal Representations and Coordination.* By submitting Shop Drawings, Product Data, samples, etc., the Contractor represents that it has determined and verified all materials, field measurements, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents, including the construction schedule.

3.9.7.2 *Contractor Coordination.* Contractor shall stamp, sign, and date each Submittal indicating its representation that the Submittal meets all of the requirements of the Contract Documents and evidence Contractor's review through execution of the following stamp to be placed on each Shop Drawings:

> "[Contractor] has reviewed and approved the field dimensions and the construction criteria, and has also made written notation regarding any information in the Shop Drawings and Submittals that does not conform to the Contract Documents. This Shop Drawing or Submittal has been coordinated with all other Shop Drawings and Submittals received to date by me as Contractor and this duty of coordination has not been delegated to Subcontractors, material suppliers, the Architect, or the Engineers on this Project.
>
> _____
> Signature of Contractor and date

3.9.7.3 *No Deviation from Contract Documents.* The submission of the Shop Drawings, Product Data, samples, etc., shall not deviate from the *requiremen*ts of the Contract Documents including detailing and design intent which is specifically outlined in Contract Documents except as specifically authorized by the Architect or through an accepted substitution pursuant to Article 3.10.4. All deviations from the Contract Documents shall be narratively described in a transmittal accompanying the Shop Drawings. However, Shop Drawings shall not be used as a means of requesting a substitution, the procedure for which is defined in Article 3.10.4, "Substitutions."

3.9.7.4 *Contractor Responsibility for Shop Drawings Conformance to Contract Documents*. Review by District and Architect shall not relieve the Contractor or any Subcontractor from its responsibility in preparing and submitting proper Shop Drawings in accordance with the Contract Documents.

3.9.7.5 *Incomplete Submittals.* Any submission, which in Architect's opinion is incomplete, contains errors, or has been checked superficially, will be returned not reviewed by the Architect for resubmission by the Contractor. Refer to Submittal Procedures of the Specifications for additional information. The Contractor shall be responsible for any related delays and shall not be the basis for any Claim.

3.9.7.6 *Shop Drawings and Submittals Shall Not Be Used as a Method to Make a Substitution.* Shop Drawings and Submittals shall not be used as a means of requesting a substitution or to make changes in the Contract Documents. If changes are made to the Contract Documents through the Shop Drawings, the Architect shall have the right to reject the Submittal. If the Architect does not note the deviation from the approved Plans and Specifications, the Contractor is still responsible for the change and the Architect or the District may require the Shop Drawings be revised to properly reflect the approved Contract Documents. The Architect or District may also require that the Contractor bear all costs under Article 4.5 and consequential damages associated with a CCD to revise Plans and Specifications to accommodate the deviation from approved Plans and Specifications.

3.9.7.7 Extent of Review. In reviewing Shop Drawings, the Architect will not verify dimensions and field conditions. The Architect will review and approve Shop Drawings, Product Data, samples, etc., for aesthetics and for conformance with the design concept of the Work and the information in the Contract Documents. The Architect's review shall neither be construed as a complete check which relieves the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any

deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission. The Architect's review shall not relieve the Contractor or Subcontractors from responsibility for errors of any sort in Shop Drawings or schedules, for proper fitting of the Work, coordination of the differing Subcontractor trades and Shop Drawings and Work which is not indicated on the Shop Drawings at the time of submission of Shop Drawings. Contractor and Subcontractors shall be solely responsible for any quantities which may be shown on the Submittals or Contract Documents.

3.10 SUBSTITUTIONS

3.10.1 Definition

A Substitution is a change in product, material, equipment, or method of construction from those required by the Construction Documents proposed by the Contractor. For this Project, a Substitution is subject to the filing of a Construction Substitution Request Form at the time of bid and meeting the requirements of this Article.

3.10.2 One Product Specified

Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words "or equal." Subject to the requirements of properly submitting a Substitution Request for as Addressed in Article 3.10.4, the Contractor may, unless otherwise stated, offer any material, process, article, etc., which shall be materially equal or better in every respect to that so indicated or specified ("Specified Item") and will completely accomplish the purpose of the Contract Documents.

3.10.3 Products Specified Which Are Commercially Unavailable

If the Contractor fails to make a request for substitutions for products, prior to the submission of its bid, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item. The decision to grant this request is solely at the District's discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the Contract Price should the substituted item cost less than the Specified Item. All risks of delay due the approval of a requested substitution by the DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, DSA review costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor's pay request.

3.10.4 Substitution Request Form

Requests for substitutions of products, materials, or processes in place of a Specified Item must be in writing on the District's Substitution Request Form ("Request Form") at the time of submitting bids to the District, except as provided for in Article 3.10.3.

The Request Form must be accompanied by evidence as to whether the proposed substitution:

a. Is equal in quality/service/ability to the Specified Item;

b. Will entail no changes in detail, construction, and scheduling of related work;

c. Will be acceptable in consideration of the required design and artistic effect;

d. Will provide no cost disadvantage to the District;

e. Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and

f. Will required no change of the construction schedule.

In completing the Request Form, the bidder must state, with respect to each requested substitution, whether the bidder will agree to provide the Specified Item in the event that the District denies the bidder's request for such requested substitution. In the event that the bidder has agreed in the Request Form to provide the Specified Item and the District denies the bidder's requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District.

After bids are opened, the apparent lowest bidder shall provide, within five (5) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as may be required to assist the Architect, CM and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

After the District's receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder's request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District. Any request for substitution that is granted by the District shall be documented and processed through a Change Order. Contractor must submit a complete Submittal of the requested substitution and a Shop Drawing showing configuration, dimensions, and other critical information associated with the substitution that meets the requirements of Article 3.9. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the DSA or any other governmental agency having jurisdiction shall be on the bidder.

If the Architect and District accept a proposed substitution, the Contractor agrees to pay for all DSA review costs, engineering and design services, including, without limitation, compensation to the Architect and affected engineers for their required time to process such substitution through the Division of the State Architect, if required, and to make all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

3.10.5 Substitution Requests After Bid

The District, in its sole discretion, may accept a request for substitution by the Contractor or may request Contractor substitute a specified item. Any substitutions requested after bids are opened shall be subject to the same conditions and requirements set forth in Article 3.10.4 above. If any

substitutions, that in the District or Architect's determination, results in a credit to the District, the credit amount shall be agreed upon in writing, otherwise, the request for substitution shall be deemed denied.

3.11 INTEGRATION OF WORK

3.11.1 Scope

The Contractor shall be responsible for cutting, fitting, or patching to complete the Work and to make all parts fit together properly. Contractor shall be responsible for ensuring that all trades are coordinated and scheduled so as to ensure the timely and proper execution of the work. When modifying existing work or installing new Work adjacent to existing work, Contractor shall match, as closely as conditions of Site and materials will allow, the finishes, textures, and colors of the original work, refinishing existing work at no additional cost to District. All cost caused by defective or ill-timed work shall be borne by Contractor. Contractor shall be solely responsible for protecting existing work on adjacent properties and shall obtain all required permits for shoring and excavations near property lines.

3.11.2 Structural Members

New or existing structural members and elements, including reinforcing bars and seismic bracing, shall not be cut, bored, or drilled except by written authority of the Architect. Work done contrary to such authority is at the Contractor's risk and subject to replacement at its own expense without reimbursement under the Contract. Schedule delays resulting from Agency approvals for unauthorized work shall be the Contractor's responsibility.

3.11.3 Subsequent Removal

Permission to patch any areas or items of the Work shall not constitute a waiver of the District's or the Architect's right to require complete removal and replacement of the areas of items of the Work if, in the opinion of the Architect or the District, the patching does not satisfactorily restore quality and appearance of the Work or does not otherwise conform to the Contract Documents.

3.12 CLEANING UP

3.12.1 Contractor's Responsibility to Clean Up

Contractor at all times shall keep premises free from debris such as waste, dust, excess water, storm water runoffs, rubbish, and excess materials and equipment. Contractor shall not leave debris under, in, or about the premises, but shall promptly remove same from the premises and dispose of it in a lawful manner. Disposal receipts or dump tickets shall be furnished to the Architect within five (5) days of request.

Contractor shall remove rubbish and debris resulting from the Work on a daily basis. Contractor shall maintain the structures and Site in a clean and orderly condition at all times until acceptance of the Project by the District. Contractor shall keep its access driveways and adjacent streets, sidewalks, gutters and drains free of rubbish, debris and excess water by cleaning and removal each day. All concrete, sidewalks, and paths of travel shall be broom cleaned daily.

3.12.2 General Final Clean-Up

Upon completion of Work, Contractor shall employ experience workers or professional cleaners for final cleaning. Contractor shall clean each surface to the condition expected in a normal, commercial, building cleaning and maintenance program including, but not limited to, the performed of the following:

a. Clean interior and exterior of buildings, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected, so surfaces are free from foreign material or discoloration;

b. Clean the Project site. The grounds should be cleared of any Contractor equipment, raked clean of debris and trash removed. Sweep paved areas broom clean;

c. Repair or replace any damaged materials. Replace any chipped or broken glass;

d. Remove any and all stains;

e. Remove labels that aren't permanent labels;

f. Clean and polish all glass, plumbing fixtures, equipment, finish hardware and similar finish surfaces. Remove any glazing compounds;

g. Remove temporary utilities, fencing, barricades, planking, sanitary facilities and similar temporary facilities from Site;

h. Remove temporary film that remains on any hardware, doors or other surfaces; and

i. Seal the bottom and tops of all doors.

3.12.3 Special Clean-Up.

In addition to the general cleaning, the following special cleaning shall be done at the completion of the Work in accordance with the Specifications including, but not limited to:

a. Remove putty stains from glazing, then wash and polish glazing;

b. Remove marks, stains, fingerprints and other soil or dirt from painted, stained or decorated work;

c. Remove temporary protection and clean and polish floors and waxed surfaces;

d. Clean and polish hardware and plumbing trim; remove stains, dust, dirt, plaster and paint;

e. Wipe surfaces of mechanical and electrical equipment;

f. Remove spots, soil, plaster and paint from tile work, and wash tile;

g. Clean all fixtures and equipment, remove excess lubrication, clean light fixtures and lamps, polish metal surfaces;

h. Vacuum-clean carpeted surfaces; and

i. Remove debris from roofs, down spout and drainage system.

3.12.4 Failure to Cleanup

If the Contractor fails to clean up as provided in the Contract Documents, the District may do so, and the cost thereof shall be the responsibility of the Contractor pursuant to Article 2.2 and seek a Deductive Change Order.

3.13 ACCESS TO WORK

The Contractor shall provide the District, the Architect, Engineers and the Inspector of Record, access to the Work in preparation and progress wherever located. Contractor shall provide safe and proper facilities for such access so that District's representatives may perform their functions.

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES AS ADDRESSED IN ARTICLE 6.

3.13.1 Special Inspection, Inspections or Tests Out of State, Out of Country or Remote from Project

If Contractor has a Subcontractor or supplier that requires in plant or special inspections or inspections or tests that are out of the country, out of the state, or a distance of more than 200 miles from the Project site, the Special Inspector or Inspector shall be provided access so the special inspection or inspection may occur in the remote location. In some cases, the DSA Inspector may also require access in addition to Special Inspectors and individuals performing tests. Inspections/tests shall occur during normal work hours. (See also Article 4.3.6)

3.14 ROYALTIES AND PATENTS

3.14.1 Payment and Indemnity for Infringement

Contractor shall hold and save the District and its officers, agents, and employees, the Construction Manager, the Architect, and the Architect's consultants harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the District, unless otherwise specifically provided in the Contract Documents, and unless such liability arises from the sole negligence, or active negligence, or willful misconduct of the District, the Architect, or the Architect's consultants.

3.14.2 Review

The review by the Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be for its adequacy for the Work and shall not be an approval for the use by the Contractor in violation of any patent or other rights of any person or entity.

3.15 INDEMNIFICATION

3.15.1 Contractor

See Agreement Form. Contractor shall ensure that its contract with each of its Subcontractors contains provisions requiring the Subcontractors to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California to a minimum level as set forth in this Article and consistent with the indemnity and hold harmless language in the Agreement Form.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA")

3.16 SUBMISSION OF DAILY REPORTS

3.16.1 General

By 10:00 a.m. on the following business day, the Contractor shall submit a Daily Report to the Inspector and copy the Architect for the previous day's Work. If there is a Construction Manager, the original Daily Report is to be provided to the Construction Manager and copies sent to the Architect and the Inspector. Daily Reports shall be prepared on forms approved by the District, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day. The District reserves the right to note inconsistencies or inaccuracies in the Daily Reports. In such cases, pertinent notes shall be entered by each party to explain points which cannot be resolved that day. Each party shall retain a signed copy of the report. Daily Reports by Subcontractors or others shall be submitted through the Contractor.

3.16.2 Labor

The Daily Report shall show names of workers, classifications, hours worked and hourly rate. The locations where work occurred shall also be identified in the Daily Report. Project superintendent expenses are not allowed.

3.16.3 Materials

The Daily Report required shall describe and list quantities of materials used and unit costs.

3.16.4 Equipment

The Daily Report required shall show type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily cost. Move-on and move-off fees shall be noted.

3.16.5 Other Services and Expenditures

Other services and expenditures shall be described in the Daily Report in detail as the District requires.

3.16.6 Failure to Submit Daily Report

If Contractor does not submit its Daily Report by 10 am the next business day, the Inspector of Record shall prepare a Daily Report addressing each of the above items. The cost for the Inspector's services to prepare the Daily Report shall be addressed through a Deductive Change Order under Article 7.7.4.

3.17 AS-BUILT DRAWINGS AND ANNOTATED SPECIFICATIONS

Throughout the duration of the Project, Contractor shall maintain on a current basis an accurate and complete set of As-Built Drawings (and Annotated Specifications) clearly showing all changes, revisions to Specifications and substitutions during construction, including, without limitation, field changes and the final location of all electrical and mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features. In case a Specification allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished. The Contractor will update the As-Built Drawings and Annotated Specifications as often as necessary to keep them current, but no less often than weekly.

Contractor shall update As-Built Drawings with complete information on an area of Work at or near the time when the Work is being performed and prior to any DSA 152 sign off and prior to any Work being covered.

The As-Built Drawings and Annotated Specifications shall be kept at the Site and available for review and inspection by the District and the Architect. Failure to maintain and update the As-Built Drawings is a basis to withhold Progress Payments pursuant to Article 9.6.

3.17.1 Upon Beneficial Occupancy

Contractor shall obtain and pay for reproducible Plans upon Beneficial Occupancy. Contractor shall deliver Plans to District Representative (Construction Manager if one is hired for the Project).

3.17.2 As-Builts at Completion of Work

Upon completion of the Work and prior to and as a condition precedent to Application for Retention Payment, the Contractor will provide one neatly prepared and complete set of As-Built Drawings and Annotated Specifications to the District. Contractor shall certify the As-Builts as a complete and accurate reflection of the actual construction conditions of the Work by affixing a stamp indicating the Drawings are As-Builts and certifying accuracy on the final set of As-Builts. Failure to deliver a complete As-Built set of Drawings may result in significant withholdings to ensure Work is properly documented. (See Article 9.9.2)

3.17.3 Log of Control and Survey Documentation

Contractor shall complete and maintain an accurate log or all control and survey documentation for the Project as the Work progresses. All reference and control points shall be recorded

on the As-Built Drawings. The basis of elevations shall be one of the established benchmarks that must be maintained on the As-Builts.

3.17.4 Record Coordinates for Key Items

Contractor shall record, by coordinates, all utilities on-site with top of pipe elevations, major grade and alignment changes, rim, grate or top of curb and flow line elevations of all drainage structures and sewer manholes. Contractor shall update record information at or near the time when work is occurring in an area and prior to DSA 152 sign off on any category of Work and prior to covering the Work.

3.17.5 BIM As-Built Drawings

If BIM is utilized for the Project, then an electronic version of such As-Built Drawings and Annotated Specifications will be delivered to District (in an acceptable format to District).

3.18 EQUIPMENT MANUALS

Contractor shall obtain and furnish three (3) complete sets of manuals containing the manufacturers' instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract Documents and any additional data specifically requested under the various sections of the Specifications for each division of the Work. The manuals shall be arranged in logical, sequential order, labeled, indexed, and placed in three-ring binders. At the completion of its Work, the Contractor shall certify, by endorsement thereon, that each of the manuals is complete, accurate, and covers all of its Work. Prior to submittal of Contractor's Application for Retention Payment, and as a further condition to its approval by the Architect, each Subcontractor shall deliver the manuals, arranged in logical, sequential order, labeled, indexed, endorsed, and placed in three-ring binders, to the Contractor, who shall assemble these manuals for all divisions of the Work, review them for completeness, and submit them to the District through the Architect.

3.19 DIR REGISTRATION

Strict compliance with all DIR registration requirements in accordance with Labor Code sections 1725.5 and 1771.1 is a material obligation of the Contractor and all of its subcontractors (of any tier) under the Contract Documents. The foregoing includes, without limitation, compliance with DIR registration requirements at all times during performance of the Work by the Contractor and all of its subcontractors of any tier. The failure of the Contractor and all subcontractors of any tier to be properly registered with DIR at all times during performance of the Work is a material breach of the Contract and subject to termination for cause.

An affirmative and ongoing obligation of the Contractor under the Contract Documents is the verification that all subcontractors of any tier are at all times during performance of the Work are in full and strict compliance with the DIR registration requirements. The Contractor shall not permit or allow any subcontractor of any tier to perform any Work without the Contractor's verification that all subcontractors are in full and strict compliance with the DIR registration requirements. Any subcontractors of any tier not properly registered with DIR shall be substituted in accordance with Labor Code section 1771.1. Contractor or its subcontractors of any tier shall not be entitled to any additional costs or time arising from or in any way related to compliance with the DIR registration requirements.

ARTICLE 4
ADMINISTRATION OF THE CONTRACT AND CLAIMS

4.1 ARCHITECT

4.1.1 Replacement of Architect

In the case of the termination of the Architect, the District may appoint an Architect or another construction professional or may perform such functions with its own licensed professional personnel. The status of the replacement Architect under the Contract Documents shall be the same as that of the former Architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 Status

Pursuant to Titles 2 of the California Code of Regulations and as required pursuant to the Field Act, Education Code 17280 et seq., the Architect will provide administration of the Contract Documents and the Work, and will be the District's representative during construction, as well as during the one (1) year period following the commencement of any warranties. The Architect will have authority to act on behalf of the District only to the extent provided in the Contract Documents.

4.2.2 Site Visits

The Architect will visit the Site at intervals necessary in the judgment of the Architect to become generally familiar with the progress and quality of the Work and to determine in general if the Work is being performed in accordance with the Contract Documents and as otherwise required by DSA.

4.2.3 Limitations of Construction Responsibility

The Architect, District and CM shall not have control over, charge of, or be responsible for construction means, methods, techniques, schedules, sequences or procedures, fabrication, procurement, shipment, delivery, receipt, installation, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility under the Contract Documents. The Architect, District and CM shall not be responsible for the Contractor's, Subcontractors', material or equipment suppliers', or any other person's schedules or failure to carry out the Work in accordance with the Contract Documents. The Architect, District and CM shall not have control over or charge of acts or omissions of the Contractor, Subcontractors, their agents or employees, or any other persons or entities performing or supplying portions of the Work. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect, District or CM in the Architect, District or CM's administration of the Contract Documents, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

4.2.4 Communications Facilitating Contract Administration

Except where a CM is on the Project, or as otherwise provided in the Contract Documents or when direct communications are warranted by special circumstances, the District and the Contractor shall communicate through the Architect. In the cases where a CM is hired for the Project, all

communication shall be through the CM (unless otherwise directed) with copies to the District, Architect and Inspector. Where direct communication is necessary between the District and the Contractor, the District's communication shall be through the District's authorized designated person. The Architect and CM shall be promptly informed, and shall receive copies of all written communications. Contractor shall not rely upon any communications from the District that is not from the District's Representative. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material or equipment suppliers shall be through the Contractor. In the case where a CM is hired for the Project, the CM shall be the main point of contact for communication of information. Copies should be sent to the Architect, District Representative and Inspector.

4.2.5 Payment Applications

The Architect will review and make recommendations to the District regarding the amounts due the Contractor on the Certificates for Payment pursuant to Article 9.3.4and subject to the Inspector's review, (CM review, if applicable) and Architect's observation. This review of Payment Applications is sometimes called a "Pencil Draft." Return of a Pencil Draft shall constitute the District's dispute of the Payment Application that has been submitted. Contractor shall promptly respond to Pencil Drafts or Contractor's Payment Applications may be delayed. Contractor's failure to promptly respond to a Pencil Draft shall qualify as a delay in the Prompt Payment of a Request for Payment or Request for Retention.

4.2.6 Rejection of Work

In addition to the rights, duties, and obligations of the Inspector under this Article, the Architect may recommend to the District that the District reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable to achieve the intent of the Contract Documents, the Architect (and/or CM) may recommend to the District that the District require additional inspection or testing of the Work in accordance with Article 13.5, whether or not such Work is Fabricated, installed, or completed. District may have Non-conforming Work removed and replaced pursuant to Article 9.7. However, neither this authority of the Architect (or CM) nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect (or CM) to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

Contractor shall, without charge, replace or correct Work found by the District to not be in conformance to Contract requirements. Contractor shall promptly segregate and remove rejected materials from the Project site.

This section is does not address a Notice of Non-Compliance and the remedies associated with a Notice of Non-Compliance which are addressed at Article 7.1.2

4.2.7 Warranties upon Completion

The Architect (and where applicable CM), in conjunction with the Inspector will conduct field reviews of the Work to determine the date of Substantial Completion and of Final Completion, shall receive and forward to the District for the District's review written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment when the Architect believes the Work has been completed in compliance with the requirements of the Contract Documents (See Article 9.11 for Close-Out). The handling by the Architect (or where applicable CM) of such warranties, maintenance manuals, or similar documents shall not diminish or transfer to the

Architect any responsibilities or liabilities required by the Contract Documents of the Contractor or other entities, parties, or persons performing or supplying the Work.

On some Projects, the District will take a phased occupancy of the Project. In those cases, the District may commence the running of warranties on the buildings, or phases that are accepted after Punch List is completed and the District has accepted Completion of the separate phase. A separate Notice of Completion may be filed for the separate building or phase of work and warranties shall commence for the separate phase only to the extent that warranties do not require coordination or connection to other buildings or other parts of the site and only if the warranted item is completed to its entirety in the segregated building or phased area.

If written warranties are not provided at the time the Punch List is nearing completion, Architect (with recommendations from the CM and Inspector) shall determine the dollar value of the warranties and shall make recommendation for withholdings necessary to effectuate the transfer of such warranties to the District for future use as part of the Punch List for the Project pursuant to Article 9.6.

Warranties are not commenced through utilizing of equipment for testing and operation as necessary to acclimate buildings or where necessary to test systems.

4.2.8 Interpretation

The Architect will interpret and decide matters concerning performance and requirements of the Contract Documents. Architect shall make clarifications as necessary to interpret the Contract Documents.

4.3 PROJECT INSPECTOR

4.3.1 General

One or more Project Inspectors employed by the District and approved by the Division of the State Architect will be assigned to the Work in accordance with the requirements of Title 24 of the California Code of Regulations. The Inspector(s) duties are as specifically defined in Title 24 Section 4-333 and 4-342 and in DSA IR A-8.

4.3.2 Inspector's Duties and DSA Noted Timelines for Inspection

All Work shall be under the observation of the Inspector. Contractor shall establish a protocol for requesting inspection with Inspector so as to not delay the Work and provide adequate time for the Inspector to perform inspection. If such a protocol is not established ahead of time, Inspector may utilize the time criteria set by Title 24 of 48 hours in advance of submitting form DSA 156 for each new area. The Inspector shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector such information as may be necessary to keep the Inspector fully informed regarding progress and manner of Work and character of materials. Such observations shall not, in any way, relieve the Contractor from responsibility for full compliance with all terms and conditions of the Contract, or be construed to lessen to any degree the Contractor's responsibility for providing efficient and capable superintendence. The Inspector is not authorized to make changes in the Drawings or Specifications nor shall the Inspector's approval of the Work and methods relieve the Contractor of responsibility for the correction of subsequently discovered defects, or from its obligation to comply with the Contract Documents.

Inspector shall electronically post DSA required documents on the DSA electronic posting website. It is the Contractor's responsibility to determine the status of posting and determine if all the criteria for sign off of a category of Work on the Project Inspection Card (Form DSA 152) as defined more thoroughly in the most current version of the DSA 152 manual posted on the DSA website.

Inspector may collaborate with Contractor about approval of areas that may be constructed and approved incrementally under the DSA 152 card pursuant to the guidelines of PR-13 at Article 1.17. Inspector shall work with Contractor to present incremental approval proposals to DSA.

4.3.3 Inspector's Authority to Reject or Stop Work

The Inspector shall have the authority to reject Work whenever provisions of the Contract Documents are not being complied with, and Contractor shall instruct its Subcontractors and employees accordingly. In addition, the Inspector may stop any Work that poses a probable risk of harm to persons or property. The Contractor shall instruct its employees, Subcontractors, material and equipment suppliers, etc., accordingly. The absence of any Stop Work Order or rejection of any portion of the Work shall not relieve the Contractor from any of its obligations pursuant to the Contract Documents.

4.3.4 Inspector's Facilities

Within seven (7) days after the notice to proceed, the Contractor shall provide the Inspector with the temporary facilities as required. More specific requirements for the Inspector facilities may be further described under Division 1 of the Specifications.

4.3.5 Testing Times

The District will provide inspection and testing at its cost during the normal eight (8) hour day Monday through Friday (except holidays). Work by the Contractor outside of the normal eight (8) hour day shall constitute an authorization from the Contractor to the District to provide inspection and testing as required outside of the normal eight (8) hour day. Contractor shall provide adequate time for inspections so as to not delay the Work. An advanced timing protocol may be established pursuant to Article 4.3.2. If the Contractor is behind Schedule then it is incumbent on the Contractor to provide advance forecast through look ahead of the anticipated date for inspection so the Inspector may plan their activities so as to not delay the Project. Contractor shall reimburse District for any additional costs associated with inspection and testing (including re-inspection and re-testing) outside the normal eight-hour day and for any retests caused by the Contractor.

It is the Contractor's responsibility to request special inspections with sufficient time so all testing may be timely completed and posted so work may proceed and the Inspector's signature is attached to the Project Inspection Card (Form 152). Specifically, timely request for special inspection under the DSA Verified Report Forms 291 (laboratory), DSA Verified Report Form 292 (Special Inspection), and DSA Verified Report 293 (geotechnical) since DSA requirements under PR 13-01 specifically gives the Special Inspections 14 days to post to the DSA website. Failure to plan and pay (if applicable) for quicker delivery of Special Inspections may be counted as Float, but is not considered Governmental Delay Float under Article 8.1.4.

4.3.6 Special Inspections, Inspections or Tests Out of State, Out of Country or Remote from Project

If Contractor has a Subcontractor or supplier that requires in plant or special inspections, inspections or tests that are out of the country, out of the state or a distance of more than 200 miles from the Project Site, the District shall provide the Special Inspector or individual performing tests time for inspection and testing during normal work hours. Contractor, however, is responsible for the cost of travel, housing, food, out of area premiums that may be in the Inspector/Testing Agreement with District, or other expenses necessary to ensure proper inspection, special inspection or testing is provided by a DSA Certified Inspector, Special Inspector, or individual performing tests. In some cases all three (DSA Inspector, Special Inspector, and Tester) may be required. In addition, if the DSA Certified Inspector, Special Inspector, or individual performing test has contractual travel clauses or special rates for out of town inspection, Contractor is responsible for all costs associated with the contractual travel costs in addition to all other costs. Arrangements for inspection and/or testing shall be made far enough in advance so as to not delay the Work.

4.4 STOP WORK ORDER

DSA may issue a Stop Work Order, or an Order to Comply, when either (1) the Work proceeds without DSA approval; (2) the Work proceeds without a DSA Inspector of Record, or (3) where DSA determines that the Work is not being performed in accordance with applicable rules and regulations, and would compromise the structural integrity of the Project or would endanger lives. If a Stop Work Order is issued, the Work in the affected area shall cease until DSA withdraws the Stop Work Order. Pursuant to Education Code section 17307.5(b), the District shall not be held liable in any action filed against the District for any delays caused by compliance with the Stop Work Order, except to the extent that an error or omission by the District is the basis for the issuance of the Stop Work Order.

Examples of Stop Work Orders that may be issued by DSA include DSA Bulletin 07-04 and Policy 10-01, the installation of automatic fire sprinkler systems without approved Plans, covering Work that has not been approved by Inspector on DSA Project Inspection Card (Form 152).

4.5 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE DISTRICT FOR PROFESSIONAL SERVICES

If at any time prior to the completion of the requirements under the Contract Documents, the District is required to provide or secure additional professional services (including CM, Inspection, Architect, Engineering and Special Consultant Services) for any reason by any act of the Contractor, the District may seek a Deductive Change Order for any costs incurred for any such additional services, which costs shall be deducted from the next progress payment. A Deductive Change Order shall be independent from any other District remedies and shall not be considered a waiver of any District rights or remedies. If payments then or thereafter due to the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the District. Additional services shall include, but shall not be limited to, the following:

a. Services made necessary by the default of the Contractor (Article 14 or Article 2.2).

b. Services made necessary due to the defects or deficiencies in the Work of the Contractor (Article 2.2 and Article 9.6).

c. Spurious or frivolous RFI's issued that do not conform to the requirements of Article 7.4. Issuance of the same RFI after receiving an answer from the Architect or Engineer

d. Review of Schedules that are provided by Contractor that do not Conform with the Requirements of Article 8.

e. Preparation of a CCD or ICD to correct a Contractor Deficiency, or Contractor Caused Notice of Non-Compliance (See Article 7.3).

f. Review of Incomplete Shop Drawings or Submittals, including the submission of Piecemeal Shop Drawings or Submittals unless piecemeal Submittals are specifically agreed upon by District (See Article 3.9)

g. Services required by failure of the Contractor to perform according to any provision of the Contract Documents.

h. Services in connection with evaluating substitutions of products, materials, equipment, Subcontractors' proposed by the Contractor, and making subsequent revisions to Drawings, Specifications, obtaining DSA approvals, DSA costs for review of CCD's, other governmental agency review costs, and providing other documentation required (except for the situation where the specified item is no longer manufactured or available). (See Article 3.10)

i. Services for evaluating and processing Claims or Disputes submitted by the Contractor in connection with the Work outside the established Change Order process.

j. Services required by the failure of the Contractor to prosecute the Work in a timely manner in compliance within the specified time of completion.

k. Services in conjunction with the testing, adjusting, balancing and start-up of equipment other than the normal amount customarily associated for the type of Work involved.

l. Services in conjunction with more than one (1) re-review of Submittals of Shop Drawings, Product Data, samples, RFI's etc.

4.6 DISPUTES AND CLAIMS

4.6.1 Decision of Architect

"Disputes" or "Claims" as defined in Article 4.6.9.1 between District and Contractor involving money or time, including those alleging an error or omission by the Architect shall be referred initially to the Architect for action as provided in Article 4.6.2 within ten (10) days after Contractor's Article 7 request for Change is denied. If there is a CM, the CM shall receive the Dispute and may review and also assemble opinions and documents to assist the Architect. A decision by the Architect, as provided in Article 4.6.5, shall be required as a condition precedent to proceeding with remedies set forth in Article 4.6.9 as to all such matters arising prior to the date Retention Payment Application is due, regardless of whether such matters relate to execution and progress of the Work, or the extent to which the Work has reached Final Completion.

The condition precedent of an Architect decision shall be waived if: (1) the position of Architect is vacant; (2) the Architect has failed to take action required under Article 4.6.5 within the time

periods required therein; or (3) the Dispute or Claim relates to a stop notice claim not arising from any extra Change Order or Immediate Change Directive for which approval has not been provided.

4.6.2 Architect's Review

The Architect (and CM) will review the Dispute and take one or more of the following preliminary actions upon receipt of a Dispute: (1) request additional supporting data from the claimant; (2) submit a schedule to the parties indicating when the Architect expects to take action; (3) reject the Dispute in whole or in part, stating reasons for rejection; (4) recommend approval of the Dispute; or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the Surety, if any, of the nature and amount of the Dispute.

4.6.2.1 *Architectural Immunity*. Architect review of Disputes and Claims shall be impartial and meant to resolve Disputes and Claims. Pursuant to the case, Huber, Hunt & Nichols, Inc. v. Moore (1977) 67 Cal.App.3d 278, the Architect is provided a quasi-judicial immunity for interpreting and deciding Disputes and Claims between the District and Contractor.

4.6.3 Documentation if Resolved

If a Dispute has been resolved, the Architect (and/or CM) will prepare a Change Order or obtain appropriate documentation to document the terms for Board approval.

4.6.4 Actions if Not Resolved

If a Dispute has not been resolved and all documentation requested pursuant to Article 4.6.2 has been provided, the Contractor shall, within ten (10) days after the Architect's initial response, assemble all the documents involved in the Dispute including copies of all back-up documentation of costs and the basis for the Dispute and take one or more of the following actions: (1) modify the initial Dispute; (2) notify the Architect that the initial Dispute stands; or (3) supplement with additional supporting data and re-submit to the Architect under Article 4.6.2.

4.6.5 Architect's Written Decision

If a Dispute has not been resolved after consideration of the foregoing and of other evidence presented by the parties or requested by the Architect, the Architect (or Architect through CM) shall provide a written decision twenty (20) days after compliance with Article 4.6.4. Upon expiration of such time period, the Architect (or Architect through CM) will render to the parties its written decision relative to the Dispute, including any change in the Contract Sum or Contract Time or both. The Architect may also request reasonable additional time to complete Architect's written decision.

If the resolution of the Dispute by the Architect is not satisfactory to the Contractor and copies of all back-up documentation of costs and the basis for the Dispute is fully articulated in a package of material that is complete, the Contractor may then submit a Claim to the District under Article 4.6.9.

4.6.6 Continuing Contract Performance

Pending final resolution of a Dispute or Claim, including, negotiation, mediation, arbitration, or litigation, the Contractor shall proceed diligently with performance of the Contract, and the District shall continue to make any undisputed payments in accordance with the Contract (less any

withholdings or offsets). If the Claim is not resolved, Contractor agrees it will neither rescind the Contract nor stop the progress of the work, but Contractor's sole remedy shall be to submit such controversy to determination by a court of competent jurisdiction in the county where the Project is located, after the Project has been completed, and not before.

4.6.6.1 *District's Option to Submit Individual Disputes to Arbitration during Claims and Disputes Process*. At the District's sole option, in order to more efficiently resolve Claims during the Project and prior to the completion of the Claims Process, pursuant to Government Code section 9201, the District may submit individual Disputes or Claims for binding arbitration and Contractor agrees to the resolution of for each individual Dispute or Claim by an Arbitrator, including resolution of time and delays. If binding arbitration is utilized for individual Disputes or Claims, such resolution is full and final as to that particular Dispute or Claim. THIS INDIVIDUAL DISPUTE ARBITRATION PROCESS IS NOT AN ARBITRATION CLAUSE AND SHALL NOT BE CONSTRUED AS AN AGREEMENT TO ARBITRATE. THIS INDIVIDUAL DISPUTES ARBITRATION PROCESS IS FOR THE SOLE PURPOSE OF STREAMLINING AND RESOLVING DISPUTES OR CLAIMS DURING CONSTRUCTION AND SHALL BE REQUESTED ON SPECIFIC INDIVIDUAL ITEMS BY THE DISTRICT PRIOR TO RETENTION PAYMENT (EVEN IF THERE ARE DEDUCTIONS MADE FROM RETENTION PAYMENT) WHICH REPRESENTS THE FINAL COMPLETION OF THE PROJECT.

a. If there is no Retention remaining on the Project, individual Disputes initiated prior to Project Final Completion shall continue until a final disposition of the Arbitration or resolution of the individual Claim or Dispute.

b. No Tolling. The Arbitration process shall not toll the Disputes or Claims process under Article 4.6 or the requirement to submit Claims to Court under Article 4.6.9.5.

4.6.7 Claims for Concealed Trenches or Excavations Greater Than Four Feet Below the Surface

When any excavation or trenching extends greater than four feet below the surface or if any condition involving hazardous substances are encountered:

a. Immediately upon discovery, The Contractor shall promptly, and before the following conditions are disturbed, notify the District, by telephone and in writing, of the condition except:

1. If such condition is a hazardous waste condition, Contractor's bid includes removal or disposal of hazardous substances. Material that the Contractor believes may be a material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law. In such case, the notice bulletin procedures of Article 7 apply.

2. Subsurface or latent physical conditions at the Site differing from those indicated in the Drawings, Specifications, Soils Report, and from Contractor's own investigation under Article 2.1.

3. Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract.

b. The District shall investigate the conditions, and if District finds that the conditions do materially so differ, do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a Change Order or Construction Change Document under the procedures described in the Contract.

c. In the event that a dispute arises between the public entity or District and the Contractor whether the conditions materially differ, involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled Completion Date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

4.6.8 Dispute Concerning Extension of Time.

If Contractor and District cannot agree upon an extension of time, whether compensable or not, then Contractor must have first completed the procedures set forth in Article 8.4. Upon completion of the procedures set forth under Article 8.4, Contractor must then comply with the requirements in this Article including those set forth under Article 4.6.9.

4.6.9 Claims Procedures

Pursuant to the remedies under Public Contract Code section 9201 and Government Code section 930.2, Contractor, through execution of this Agreement, also agrees to comply with the Claims requirements of Article 4.6 to quickly and efficiently resolve Disputes and Claims. Further, to provide a level of accuracy to the records submitted, the District shall have the right to audit books and records pursuant to Article 13.11 based on the actual costs incurred and to reduce the uncertainty in resolving Disputes and Claims with limited information.

4.6.9.1 *Procedure Applicable to All Claims*

a. Definition of Claim: A "Claim" is where a Dispute between the parties rises to the level where backup documentation is assembled and provided to the District as a separate demand by the Contractor for: (1) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by the District under the Contract; (2) payment by the District of money or damages arising from Work done by, or on behalf of, the Contractor pursuant to the Contract and payment for which is not otherwise expressly provided for or to which the Contractor is not

otherwise entitled to; or (3) an amount of payment disputed by the District. If the Claim is for damages associated with a DSA Stop Work Order, the Contractor shall not be entitled to a request for Compensation, but shall be entitled to utilize Governmental Delay Float (See Article 8.1.4.1.)

b. Filing Claim Is Not Basis to Discontinue Work: The Contractor shall promptly comply with Work under the Contract or Work requested by the District even though a written Claim has been filed. The Contractor and the District shall make good faith efforts to resolve any and all Claims that may arise during the performance of the Work covered by this Contract.

c. Claim Notification: The Contractor shall within seven (7) calendar days after the written decision of the Architect, or if the time period for Architect's decision has passed under Article 4.6.5, submit a notification in writing sent by registered mail or certified mail with return receipt requested, with the District (and the District's CM) stating clearly the basis for the Claim and including all relevant and required documents. If the notification is not submitted within seven (7) days after the written decision of the Architect or the passage of time under Article 4.6.5, the Contractor shall be deemed to have waived all right to assert the Claim, and the Claim shall be denied. Claims submitted after the Retention Payment date shall also be considered null and void by the District. All Claims shall be reviewed pursuant to Articles 4.6.1 through 4.6.5.

The Formal Notification of Claim must be presented as follows:

(1) The term "Claim" must be at the top of the page in no smaller than 20 point writing.

(2) All documentation submitted pursuant to Article 4.6 to the Architect shall be submitted with the "Claim."

(3) A stack of documents, copy of all Project documents, or the submission of random documents shall not constitute an adequate reference to supporting documentation.

(4) Any additional or supporting documentation that Contractor believes is relevant should be submitted at this time.

d. Reasonable Documents to Support Claim: The Contractor shall furnish reasonable documentation to support the Claim. The Contractor shall provide all written detailed documentation which supports the Claim, including but not limited to: arguments, justifications, cost, estimates, Schedule analysis and detailed documentation. The format of the required reasonable documentation to support the Claim shall include, without limitation:

1. Cover letter.

2. Summary of factual basis of Claim and amount of Claim.

3. Summary of the basis of the Claim, including the specific clause and section under the Contract under which the Claim is made.

4. Documents relating to the Claim, including:

   a. Specifications sections in question.
   b. Relevant portions of the Drawings
   c. Applicable Clarifications (RFI's)
   d. Other relevant information, including responses that were received.
   e. Contractor Analysis of Claim merit.
      (a) Contractor's analysis of any Subcontractor vendor Claims that are being passed through.
      (b) Any analysis performed by outside consultants
      (c) Any legal analysis that Contractor deems relevant
   f. Break down of all costs associated with the Claim.
   g. For Claims relating to time extensions, an analysis and supporting documentation evidencing any effect upon the critical path in conformance with the requirements of Article 8.4 chronology of events and related correspondence.
   h. Applicable Daily Reports and logs.
      (a) If the Daily Reports or Logs are not available, lost or destroyed, there shall be a presumption that the lost documentation was unfavorable to the Contractor. See California Civil Jury Instruction 204.
   i. For Claims involving overhead, cost escalation, acceleration, disruption or increased costs, a full version of job costs reports organized by category of work or Schedule of Values with budget information tracked against actual costs. Any and all supporting back-up data, including the original bid (and associated original unaltered metadata).
      (a) The metadata and bid information shall be provided confidentially and subject to a protective order to prevent dissemination to other contractors or to the public. However, the bid documentation should remain intact and available for review and inspection in case of this type of increased cost Claim.
      (b) This data on the bid shall be made available to any District attorneys or experts and shall also be utilized as evidence for any legal proceedings.
      (c) If the bid documentation is not available, lost or destroyed, there shall be a presumption that the lost bid documentation was unfavorable to the

Contractor. See California Civil Jury Instruction 204.

e. Certification: The Contractor (and Subcontractors, if applicable) shall submit with the Claim a certification under penalty of perjury:

1. That the Contractor has reviewed the Claim and that such Claim is made in good faith;

2. Supporting data are accurate and complete to the best of the Contractor's knowledge and belief;

3. The amount requested accurately reflects the amount of compensation for which the Contractor believes the District is liable.

4. That the Contractor is familiar with Government Code sections 12650 et seq. and Penal Code section 72 and that false claims can lead to substantial fines and/or imprisonment.

f. Signature of Certification: If the Contractor is not an individual, the certification shall be executed by an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.

g. Upon receipt of a Claim and all supporting documents as required above, the District shall conduct a reasonable review of the Claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and Contractor may, by mutual agreement, extend the time period provided in this paragraph.

h. If the District needs approval from its governing Board to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the Claim, and the governing Board does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a Claim sent by registered mail or certified mail, return receipt requested, the District shall have up to three days following the next duly publicly noticed meeting of the governing Board after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.

i. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. If the District fails to issue a written statement, paragraph o below shall apply.

j. If the Contractor disputes the District's written response, or if the District fails to respond to a Claim issued pursuant to this Article 4.6.9 within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the District shall schedule a meet and confer conference within 30 days for settlement of the Claim.

k. Within 10 business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the District shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the District and the Contractor sharing the associated costs equally. The District and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures in Article 4.6.9.5.

l. For purposes of this Article 4.6.9, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

m. Unless otherwise agreed to by the District and the Contractor in writing, the mediation conducted pursuant to this Article 4.6.9 shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

n. This Claims process does not preclude the District from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this Article 4.6.9 does not resolve the parties' Claim. This Claims process does not preclude the District from submitting individual Disputes or Claims to binding arbitration pursuant to Article 4.6.9.4 below.

o. Failure by the District to respond to a Claim from the Contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this Article 4.6.9 shall result in the Claim being deemed

rejected in its entirety. A Claim that is denied by reason of the District's failure to have responded to a Claim, or its failure to otherwise meet the time requirements of this Article 4.6.9, shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of the Contractor.

p. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a Claim against a District because privity of contract does not exist, the Contractor may present to the District a Claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the Contractor present a Claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the Claim be presented to the District shall furnish reasonable documentation to support the Claim. Within 45 days of receipt of this written request, the Contractor shall notify the subcontractor in writing as to whether the Contractor presented the Claim to the District and, if the Contractor did not present the Claim, provide the subcontractor with a statement of the reasons for not having done so.

q. Upon receipt of a Claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable.

r. The Contractor's Claim shall be denied if it fails to follow the requirements of this Article.

4.6.9.2 *District (through CM or District's Agent or Attorney) May Request Additional Information*. Within thirty (30) days of receipt of the Claim and the information under this Article, the District may request in writing any additional documentation supporting the Claim or documentation relating to defenses to the Claim which the District may assert. If additional documents are required, the time in which the Claim is evaluated may be extended by a reasonable time so the Claim and additional documents may be reviewed.

4.6.9.3 *Claims Procedures in Addition to Government Code Claim.* Nothing in the Claims procedures set forth in this Article 4 of the General Conditions shall act to waive or relieve the Contractor from meeting the requirements set forth in Government Code section 900 et seq.

4.6.9.4 *Binding Arbitration of Individual Claim Issues.* To expedite resolution of Claims pursuant to Public Contract Code section 9201, at the District's sole option, the District may submit individual Claims to Arbitration prior to Retention Payment consistent with the requirements of Article 4.6.6.1.

4.6.9.5 *Resolution of Claims in Court of Competent Jurisdiction.* If Claims are not resolved under the procedure set forth and pursuant to Article 4.6.9, such Claim or controversy shall be submitted to a court in the County of the location of the Project after the Project has been completed, and not before.

4.6.9.6 *Warranties, Guarantees and Obligations.* The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor by the General Conditions and amendments thereto; and all of the rights and remedies available to District and Architect thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Article will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

ARTICLE 5
SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 Subcontractual Relations Bound to Same Contract Terms at General Contractor

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the same obligations and responsibilities, assumed by Contractor pursuant to the Contract Documents. Each subcontract agreement shall preserve and protect the rights of the District and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Upon written request of the Subcontractor, the Contractor shall identify to the Subcontractor the terms and conditions of the proposed subcontract agreement, which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.1.2 Subcontractor Licenses and DIR Registration

All Subcontractors shall be properly licensed by the California State Licensing Board. All Subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. No portion of the Work is permitted to be performed by a Subcontractor of any tier unless the subcontractor is properly registered with DIR. Any Subcontractors of any tier not properly registered with DIR shall be substituted in accordance with Labor Code section 1771.1.

5.1.3 Substitution of Subcontractor

Substitution of Subcontractors shall be permitted only as authorized under Public Contract Code §§ 4107 et seq. Any substitutions of Subcontractors shall not result in any increase in the Contract Price or result in the granting of any extension of time for the completion of the Project.

5.1.4 Contingent Assignment of Subcontracts and Other Contracts

Each subcontract, purchase order, vendor contract or agreement for any portion of the Work is hereby assigned by the Contractor to the District provided that:

a. Such assignment is effective only after Termination of this Contract with the Contractor by the District as provided under Article 14 and only for those subcontracts and other contracts and agreements that the District accepts by notifying the Subcontractor or Materialman (as may be applicable) in writing; and

b. Such assignment is subject to the prior rights of the Surety(ies) obligated under the Payment Bond and Performance Bond.

c. The Contractor shall include adequate provisions for this contingent assignment of subcontracts and other contracts and agreements in each such document.

ARTICLE 6
CONSTRUCTION BY DISTRICT OR BY SEPARATE CONTRACTORS

6.1 DISTRICT'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 Separate Contracts.

6.1.1.1 District reserves the right to let other contracts in connection with this Work. Contractor shall afford other contractors reasonable opportunity for (1) introduction and storage of their materials; (2) access to the Work; and (3) execution of their work. Contractor shall properly connect and coordinate its work with that of other Contractors.

6.1.1.2 If any part of Contractor's Work depends on proper execution or results of any other contractor, the Contractor shall inspect and within seven (7) days or less, report to Architect, in writing, any defects in such work that render it unsuitable for proper execution of Contractor's Work. Contractor will be held accountable for damages to District for that Work which it failed to inspect or should have inspected. Contractor's failure to inspect and report shall constitute its acceptance of other contractors' Work as fit and proper for reception of its Work, except as to defects which may develop in other contractors' work after execution of Contractor's work.

6.1.1.3 To ensure proper execution of its subsequent Work, Contractor shall measure and inspect Work already in place and shall at once report to the Architect in writing any discrepancy between executed Work as built and the Contract Documents.

6.1.1.4 Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by District in prosecution of the Project and the potential impact of such Work on the Baseline Schedule or Schedule updates.

6.1.1.5 Nothing herein contained shall be interpreted as granting to Contractor the exclusive occupancy at the site of Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project Site. If execution of any contract by the District is likely to cause interference with Contractor's performance of this Contract, once Contractor provides District timely written notice and identifies the Schedule Conflict, District shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether Work can be coordinated so that contractors may proceed simultaneously.

6.1.1.6 District shall not be responsible for any damages suffered or extra costs incurred by Contractor resulting directly or indirectly from award or performance or attempted performance of any other contract or contracts at the Project necessary for the performance of the Project (examples include Electrical Utility Contractor, separate offsite contractor, a separate grading contractor, furniture installation etc.)

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES BASED ON DOCUMENTATION PROVIDED WITH THIS BID OR DISCUSSED AT THE JOB WALK. CONTRACTOR HAS MADE ALLOWANCE FOR ANY DELAYS OR DAMAGES WHICH MAY ARISE FROM COORDINATION WITH CONTRACTORS REQUIRED FOR OTHER PHASES.

IF ANY DELAYS SHOULD ARISE FROM ANOTHER CONTRACTOR WORKING ON A DIFFERENT PHASE, CONTRACTOR'S SOLE REMEDY FOR DAMAGES, INCLUDING DELAY DAMAGES, SHALL BE AGAINST THE CONTRACTOR WHO CAUSED SUCH DAMAGE AND NOT THE DISTRICT. CONTRACTOR SHALL PROVIDE ACCESS TO OTHER CONTRACTORS FOR OTHER PHASES AS NECESSARY TO PREVENT DELAYS AND DAMAGES TO OTHER CONTRACTORS WORKING ON OTHER PHASES OF CONSTRUCTION.

6.1.2 District's Right to Carry Out the Work

(See Article 2.2)

6.1.3 Designation as Contractor

When separate contracts are awarded to contractors on the Project Site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate District/Contractor Agreement.

6.1.4 District Notice to the Contractor of Other Contractors

The Contractor shall have overall responsibility to reasonably coordinate and schedule Contractor's activities with the activities of the District's forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the District in reviewing their construction schedules when:

a. Notice is provided in the Contract Documents of other scope of Work,

b. In the case where there is known Work to be performed by other Contractors

c. For outside contractors hired by utilities

d. Where the Contract Document provides "Work by Others" or "By Others"

e. Where specifically noted during the Pre-Bid Conference

f. Where specifically noted in the Mandatory Job Walk

g. By CO or ICD,

h. With respect to the installation of :
   1. Furniture,
   2. Electronics and networking equipment,
   3. Cabling,
   4. Low voltage,
   5. Off-site work,
   6. Grading (when by a separate contractor),

7. Environmental remediation when excluded by the Contract Documents (i.e. asbestos, lead or other hazardous waste removal)
8. Deep cleaning crews,
9. Commissioning and testing,
10. Keying and re-keying,
11. Programming

6.1.4.1 Exception where no Coordination is Required on the Part of the Contractor for Turn Key Operations. If the Contractor has specifically outlined a "Turn Key" or "Complete Delivery" of a final completed operational school in writing as part of the Baseline Schedule..

6.1.4.2 The Contractor shall make any revisions to the Baseline Schedule (or Schedule Update) and Contract Sum deemed necessary after a joint review and mutual agreement. The Baseline Schedule (or Schedule Update) shall then constitute the Schedules to be used by the Contractor, separate contractors, and the District until subsequently revised. Additionally, Contractor shall coordinate with Architect, District, and Inspector to ensure timely and proper progress of Work.

6.2 CONSTRUCTIVE OWNERSHIP OF PROJECT SITE AND MATERIAL

Upon commencement of Work, the Contractor becomes the constructive owner of the entire site, improvements, material and equipment on Project site. Contractor must ensure proper safety and storage of all materials and assumes responsibility as if Contractor was the owner of the Project site. All risk of loss or damage shall be borne by Contractor during the Work until the date of Completion. As constructive owner of the Project site, Contractor must carry adequate insurance in case of calamity and is not entitled to rely on the insurance requirements as set forth in this Agreement as being adequate coverage in case of calamity.

6.3 DISTRICT'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors, and the District as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Article 3.12, the District may clean up and allocate the cost among those it deems responsible.

ARTICLE 7
CHANGES IN THE WORK

7.1 CHANGES

7.1.1 No Changes Without Authorization

There shall be no change whatsoever in the Drawings, Specifications, or in the Work without an executed Change Order, Change Order Request, Immediate Change Directive, or order by the Architect for a minor change in the Work as herein provided. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District's Governing Board or designated representative with delegated authority (subject to Board ratification) has authorized the same and the cost thereof approved in writing by Change Order or executed Construction Change Document. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications. Notwithstanding anything to the contrary in this Article 7, all Change Orders shall be prepared and issued by the Architect and shall become effective when executed by the District's Governing Board, the Architect, and the Contractor.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code section 20118.4 (Please check with the District since there are different interpretations of the limitations of Public Contract Code section 20118.4 depending on the County the Project is located). In the event that Contractor proceeds with any change in Work without first notifying District and obtaining the Architect's and District's consent to a Change Order, Contractor waives any Claim of additional compensation for such additional work and Contractor takes the risk that a Notice of Non-Compliance may issue, a critical path Project delay may occur, and the Contractor will also be responsible for the cost of preparation and DSA CCD review fees for a corrective DSA approved Construction Change Document.

CONTRACTOR UNDERSTANDS, ACKNOWLEDGES, AND AGREES THAT THE REASON FOR THIS NOTICE REQUIREMENT IS SO THAT DISTRICT MAY HAVE AN OPPORTUNITY TO ANALYZE THE WORK AND DECIDE WHETHER THE DISTRICT SHALL PROCEED WITH THE CHANGE ORDER OR ALTER THE PROJECT SO THAT SUCH CHANGE IN WORK BECOMES UNNECESSARY AND TO AVOID THE POSSIBLE DELAYS ASSOCIATED WITH THE ISSUANCE OF A NOTICE OF NON-COMPLIANCE.

7.1.2 Notices of Non-Compliance

Contractor deviation or changes from approved Plans and Specifications may result in the issuance of a Notice of Non-Compliance (See DSA Form 154). Contractor is specifically notified that deviations from the Plans and Specifications, whether major or minor, may result in the requirement to obtain a DSA Construction Change Document to correct the Notice of Non-Compliance. (See Article 7.3.1 for Definition of CCD). In some cases, the lack of a DSA approved CCD AND verification from the Inspector that a Notice of Non-Compliance has been corrected may result in a critical path delay to the next

stage of Work on the Project. Specifically, a deviation from approved Plans and Specifications may prevent approval of the category of Work listed in the DSA 152 Project Inspection Card. Any delays that are caused by the Contractor's deviation from approved Plans and Specifications shall be the Contractor's responsibility.

7.1.3 Architect Authority

The Architect will have authority to order minor changes in the Work that do not involve DSA Approval not involving any adjustment in the Contract Sum, or an extension of the Contract Time.

7.2 CHANGE ORDERS ("CO")

A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District's Governing Board), the Contractor, and the Architect stating their agreement upon all of the following:

a. A description of a change in the Work;

b. The amount of the adjustment in the Contract Sum, if any; and

c. The extent of the adjustment in the Contract Time, if any.

A CO may be comprised of ICD's, Response to RFP's and COR's

7.3 CONSTRUCTION CHANGE DOCUMENT (CCD Category A, and CCD Category B) and IMMEDIATE CHANGE DIRECTIVE (ICD)

7.3.1 Definitions

7.3.1.1 *Construction Change Document (CCD)*. A Construction Change Document is a DSA term that is utilized to address changes to the DSA approved Plans and Specifications. There are two types of Construction Change Documents. (1) DSA approved CCD Category A for Work affecting structural, access compliance or fire/ life safety of the Project which will require a DSA approval; and, (2) CCD Category B for work NOT affecting structural safety, access compliance or fire/ life safety that will not require a DSA approval (except to confirm that no approval is required). Both CCD Category A and Category B shall be set forth in DSA Form 140 and submitted to DSA as required.

7.3.1.2 *Immediate Change Directive (ICD)*. An Immediate Change Directive is a written order to the Contractor prepared by the Architect and signed by the District (and CM if there is a CM on the Project) and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The District may by ICD, without invalidating the Contract, direct immediate changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions within. If applicable, the Contract Sum and Contract Time will be adjusted accordingly.

In the case of an Immediate Change Directive being issued, Contractor must commence Work immediately or delays from failure to perform the ICD shall be the responsibility of Contractor and the failure to move forward with Work immediately shall also be grounds for Termination under Article 14.

An ICD does not automatically trigger an Article 7.6 Dispute or Claim. Contractor must timely follow the procedures outlined at Article 7.6 and 4.6 where applicable.

Refer to Division 1 and Supplementary General Conditions for a copy of the proposed Immediate Change Directive form.

7.3.2 Use to Direct Change

An ICD shall be used to move work forward immediately and to avoid delay. In some cases, an ICD shall be issued in the absence of agreement on the terms of a CO, COR, or RFP. A copy of an ICD form is provided in the Supplementary General Conditions and Division 1. The anticipated not to exceed price for the Work will be inserted into the ICD. In the case of an ICD issued to correct Contractor Deficiencies or to correct a Contractor caused Notice of Non-Compliance, the ICD may be issued with $0 and no additional time. Contract may prepare a COR associated with the ICD pursuant to Article 7. However, Contractor shall proceed with all Work required under an Approved ICD immediately upon issuance. Failure to proceed with the Work under an ICD shall be grounds for Termination for Cause under Article 14 or take over the Work under Article 2.2.

If adequate time exists, an ICD may be subject of an RFP for pricing and determination if any time that may be required. However, if an RFP is not completed, Contractor shall immediately commence Work when an ICD is issued. If the RFP is incomplete, it may still be completed to be submitted for pricing purposes as long as the RFP is submitted within the timeline provided by the RFP, or within 10 days following issuance of the ICD.

7.3.3 ICD Issued Over a Notice of Non-Compliance or to Cover Work Subject to a DSA 152 Sign Off

In some cases, an ICD shall be for the purpose of proceeding with Work to keep the Project on Schedule and as an acknowledgement by the District that Contractor is proceeding with Work contrary to a Notice of Non-Compliance, prior to issuance of a DSA approved CCD Category A, or to direct the covering of Work which has not yet received a DSA 152 Inspection Approval to move forward.

7.3.3.1 *Contractor Compliance with all Aspects of an IC*D. Contractor is to undertake the ICD and comply with all aspects of the Work outlined in the ICD. Inspector is to inspect the Work pursuant to the ICD. Failure to follow the ICD may result in deduction of the ICD Work under Article 2.2 or Termination of the Contractor pursuant to Article 14.

7.3.3.2 *Exception in the Case of DSA Issued Stop Work Order*. Contractor must proceed with an ICD even if a CCD has not been approved by DSA except in the case of a DSA issued Stop Work Order. If a DSA Stop Work Order is issued, Contractor must stop work and wait further direction from the District.

7.3.3.3 *ICD Due to Contractor Deficiency or Contractor Caused Notice of Non-Compliance.* If an ICD is issued to correct a Contractor Deficiency or a Contractor caused notice of Non-Compliance, Contractor specifically acknowledges responsibility for all consequential damages associated with the Contractor Deficiency or Contractor caused Notice of Non-Compliance and all consequential damages and costs incurred to correct the deficiency under Article 4.5

7.4 REQUEST FOR INFORMATION ("RFI")

7.4.1 Definition

A RFI is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems which have arisen under field conditions.

7.4.1.1 A RFI shall not be used as a vehicle to generate time extensions.

7.4.1.2 Resubmission of the same or similar RFI is not acceptable. RFI's that are similar should be addressed in Project meetings where the requestor (Contractor, Subcontractor or vendor) is able to address the particular issue with the Architect or Engineer and a resolution addressed in the minutes.

7.4.1.3 A RFI response applicable to a specific area cannot be extended to other situations unless specifically addressed in writing within the RFI or in a separate RFI.

7.4.1.4 RFI's should provide a proposed solution and should adequately describe the problem that has arisen.

7.4.2 Scope

The RFI shall reference all the applicable Contract Documents including Specification section, detail, page numbers, Drawing numbers, and sheet numbers, etc. The Contractor shall make suggestions and interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Cost, Contract Time, or the Contract Documents.

7.4.3 Response Time

The Architect must respond to a RFI within a reasonable time after receiving such request. If the Architect's response results in a change in the Work, then such change shall be effected by a written CO, COR RFP or ICD, if appropriate. If the Architect cannot respond to the RFI within a reasonable time, the Architect shall notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond.

7.4.4 Costs Incurred

The Contractor shall be responsible for any costs incurred for professional services as more fully set forth in Article 4.5, which shall be subject to a Deductive Change Order, if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making such request. District, at its sole discretion, shall issue a Deductive Change Order to Contractor for all such professional services arising from this Article.

7.5 REQUEST FOR PROPOSAL ("RFP")

7.5.1 Definition

A RFP is a written request prepared by the Architect (and/or CM) requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change on the Contract Price and (if applicable) the Contract Time. If Architect issues a Bulletin, the Changed items in the Bulletin shall be addressed as an RFP and all responses shall be prepared to a Bulletin as addressed in this Article 7.5. A form RFP is included in the Division 1 documents.

7.5.2 Scope

A RFP shall contain adequate information, including any necessary Drawings and Specifications, to enable Contractor to provide the cost breakdowns required by Article 7.7. The Contractor shall not be entitled to any Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not.

7.5.3 Response Time

Contractor shall respond to an RFP within ten (10) days or the time period otherwise set forth in the RFP.

7.6 CHANGE ORDER REQUEST ("COR")

7.6.1 Definition

A COR is a written request prepared by the Contractor supported by backup documentation requesting that the District and the Architect issue a CO based upon a proposed change, cost, time, or cost and time that may be incurred on the Project or arising from an RFP, ICD, or CCD.

7.6.2 Changes in Price

A COR shall include breakdowns per Article 7.7 to validate any change in Contract Price due to proposed change or Claim.

7.6.3 Changes in Time

A COR shall also include any additional time required to complete the Project only if the delay is a critical path delay. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Article 8. A schedule fragnet showing the time delay must be submitted with the COR. Any changes in time will be granted only if there is an impact to the critical path. If Contractor fails to request a time extension in a COR, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7 COST OF CHANGE ORDERS

7.7.1 Scope

Within ten (10) days after a request is made for a change that impacts the Contract Sum as defined in Article 9.1, the critical path, or the Contract Time as defined in Article 8.1.1, the Contractor shall provide the District and the Architect, with a written estimate of the effect of the proposed CO upon the Contract Sum and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, and wage rates required for the

change, and the effect upon the Contract Time of such CO. Changes may be made by District by an appropriate written CO, or, at the District's option, such changes shall be implemented immediately upon the Contractor's receipt of an appropriate written Construction Change Document.

District may, as provided by law and without affecting the validity of this Agreement, order changes, modification, deletions and extra work by issuance of written CO or CCD from time to time during the progress of the Project, Contract Sum being adjusted accordingly. All such Work shall be executed under conditions of the original Agreement except that any extension of time caused thereby shall be adjusted at time of ordering such change. District has discretion to order changes on a "time and material" basis with adjustments to time made after Contractor has justified through documentation the impact on the critical path of the Project.

7.7.1.1 *Time and Material Charges.* If the District orders Work on a "time and material" basis, timesheets shall be signed daily by the Inspector or District Representative at or near the time the Work is actually undertaken and shall show the hours worked, and the Work actually completed. No time sheets shall be signed the next day. A copy shall be provided to the Person signing the document at the time the document is signed, but not before 10 am the following day.

7.7.2 Determination of Cost

The amount of the increase or decrease in the Contract Price from a CO or COR, if any, shall be determined in one or more of the following ways as applicable to a specific situation:

a. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. If an agreement cannot be reached within fifteen (15) days after submission and negotiation of Contractor's proposal, Contractor may submit pursuant to Article 7.7.3. Submission of sums which have no basis in fact are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq.);

   1. If the District objects to 7.7.2(a) as a method for submission due to inaccuracies in the submitted amount, overstatement of manpower or time required to perform the CO, or unreliability of the data provided, the District may either have the Architect or a professional estimator determine the cost for the CO, and the applicable time extension, or the Contractor shall utilize Article 7.7.2(d) or 7.7.3.

   2. Once the District provides a written objection to use of Article 7.7.2(a) due to unreliability of the estimated price, the Contractor shall no longer utilize mutual acceptance of a lump sum as a method for submission of CO's and shall provide a breakdown of estimated or actual costs pursuant to Article 7.7.2(d) or 7.7.3

b. By unit prices contained in Contractor's original bid and incorporated in the Project documents or fixed by subsequent agreement between District and Contractor;

c. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee. However, in the case of disagreement, Contractor must utilize the procedure under Article 7.7.3; or

d. By cost of material and labor and percentage of overhead and profit. If the value is determined by this method the following requirements shall apply:

1. *Basis for Establishing Costs*

(1) Labor will be the cost for wages prevailing locally for each craft or type of workers at the time the extra Work is done, plus employer payments of payroll taxes and workers compensation insurance (exclude insurance costs as part of the overhead and profit mark-up), health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. In no case shall the total labor costs exceed the applicable prevailing wage rate for that particular classification. The use of a labor classification which would increase the extra Work cost will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

(2) Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery. The District reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the District.

(3) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $250 or less.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the Work is performed. Rates applied shall be appropriate based on actual equipment need and usage. Monthly, weekly or other extended use rates that results in the lowest cost shall be applied if equipment is used on site for extended periods.

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Necessary loading and transportation costs for equipment used on the extra Work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the District than holding it at the Work Site, it shall be returned unless the Contractor elects to keep it at the Work Site at no expense to the District.

All equipment shall be acceptable to the Inspector, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and modifications shall be used to classify equipment, and equipment shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

If tool and equipment charges are part of a Dispute or Claim, the District reserves the right to utilize actual costs for tools and equipment or a depreciation rate for equipment based on audit finding under Article 13.11 and deduct any rental charges that exceed actual or depreciated costs.

e. Other Items. The District may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.

f. Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the request for payment is not substantiated by invoices or other documentation, the District may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.

g. Overhead. Overhead, including direct and indirect costs, shall be submitted with the COR and include: field overhead, home office overhead, off-site supervision, CO preparation/negotiation/research, time delays, Project interference and disruption, additional guaranty and warranty durations, on-site supervision, additional temporary protection, additional temporary utilities, additional material handling costs, liability and property damage insurance, and additional safety equipment costs.

7.7.3 Format for COR or CO's

The following format shall be used as applicable by the District and the Contractor to communicate proposed additions to the Contract. All costs submitted shall be actual costs and labor shall be unburdened labor. Refer to Division 1 for a copy of the Construction Change Order form.

	EXTRA	CREDIT
(a) Material (attach itemized quantity and unit cost plus sales tax)		

		EXTRA	CREDIT
(b)	Labor Not to Exceed Applicable Prevailing Wage Rates (attach itemized hours and rates)		
(c)	Equipment (attach invoices)		
(d)	Subtotal		
(e)	If Subcontractor performed work, add Subcontractor's overhead and profit to portions performed by Subcontractor, not to exceed 10% of item (d).		
(f)	Subtotal		
(g)	Contractor's Overhead and Profit: Not to exceed 10% of Item (d) if Contractor performed the work. No more than 5% of Item (d) if Subcontractor performed the work. If work was performed by Contractor and Subcontractors, portions performed by Contractor shall not exceed 10% of Item (d), and portions performed by Subcontractor shall not exceed 10% of Item (d).		
(h)	Subtotal		
(i)	Bond not to exceed one percent (1%) of Item (h)		
(k)	TOTAL		
(l)	Time/ Days		

The undersigned Contractor approves the foregoing Change Order or Immediate Change Directive as to the changes, if any, and the Contract price specified for each item and as to the extension of time allowed, if any, for completion of the entire Work on account of said Change Order or Immediate Change Directive, and agrees to furnish all labor, materials and service and perform all Work necessary to complete any additional Work specified therein, for the consideration stated herein. It is understood that said Change Order or Immediate Change Directive shall be effective when approved by the Governing Board of the District.

It is expressly understood that the value of such extra Work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages or time extensions not included are deemed waived.

The Contractor expressly acknowledges and agrees that any change in the Work performed shall not be deemed to constitute a delay or other basis for claiming additional compensation based on theories including, but not limited to, acceleration, suspension or disruption to the Project.

7.7.3.1 *Adjustment for Time and Compensable Delay*. A CO shall also include any additional time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Article 8 of the General Contract. A schedule fragnet showing the time delay must be submitted with the CO. Any changes in time will be granted only if there is an impact to the critical path. If Contractor fails to request a time extension in a CO, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7.4 Deductive Change Orders

All Deductive Change Order(s) must be prepared utilizing the form under Article 7.7.3 (a) – (d) only, setting forth the actual costs incurred. Except in the case of an Article 2.2 or 9.6 Deductive Change Order where no mark-up shall be allowed, Contractor will be allowed a maximum of 5% total profit and overhead.

For unilateral Deductive Change Orders, or where credits are due from Contractor for Allowances, Deductive Items, Inspection, Damage, DSA CCD review costs, Architect or Inspector costs for after hours or corrective services, Work removed from the Agreement under Article 2.2 or Article 9.6, there shall be no mark-up.

District may, any time after a Deductive Change Order is presented to Contractor by District for items under Article 2.2 or Article 9.6 or if there is disagreement as to the Deductive Change Order, issue a unilateral Deductive Change Order on the Project and deduct the Deductive Change Order from a Progress Payment, Final Payment, or Retention.

7.7.5 Discounts, Rebates, and Refunds

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omissions in the Work as provided herein. All CO's are subject to Audit under Article 13.11 for discounts, rebates and refunds.

7.7.6 Accounting Records

With respect to portions of the Work performed by CO's and CCD's on a time-and-materials, unit-cost, or similar basis, the Contractor shall keep and maintain cost-accounting records in a format consistent with accepted accounting standards and satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

Any time and material charges shall require Inspector's signature on time and material cards showing the hours worked and the Work actually completed. (See Article 7.7.1.1)

7.7.7 Notice Required

If the Contractor desires to initiate a Dispute or Claim for an increase in the Contract Price, or any extension in the Contract Time for completion, Contractor shall notify the applicable party responsible for addressing the Dispute or Claim pursuant to Article 4.6. No Claim or Dispute shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such Claim shall be authorized by a CO.

7.7.8 Applicability to Subcontractors

Any requirements under this Article 7 shall be equally applicable to CO's, COR's or ICD's issued to Subcontractors by the Contractor to the same extent required by the Contractor.

7.7.9 Alteration to Change Order Language

Contractor shall not alter or reserve time in COR's, CO's or ICD's. Contractor shall execute finalized CO's and proceed under Article 7.7.7 and Article 4.6 with proper notice. If Contractor intends to reserve time without an approved CPM schedule prepared pursuant to Article 8 or without submitting a fragnet showing delay to critical path, then Contractor may be prosecuted pursuant to the False Claim Act.

ARTICLE 8
TIME AND SCHEDULE

8.1 DEFINITIONS

8.1.1 Contract Time

Contractor shall perform and reach Substantial Completion (See Article 1.1.46) within the time specified in the Agreement Form. Moreover, Contractor shall perform its Work in strict accordance with the Project Milestones in the Contract Documents and shall proceed on a properly developed and approved Baseline Schedule, which represents the Contractor's view of the practical way in which the Work will be accomplished. Note that Contract Time includes and incorporates all Float and other Baseline inclusions as noted in Article 8.3.2.1 and as otherwise specifically noted in Article 8.

8.1.2 Notice to Proceed

District may give a Notice to Proceed within ninety (90) days of the award of the bid by District. Once Contractor has received the notice to proceed, Contractor shall complete the Work in the period of time referenced in the Contract Documents.

In the event that District desires to postpone the giving of the Notice to Proceed beyond this three-month period, it is expressly understood that with reasonable notice to the Contractor, the giving of the date to proceed may be postponed by District. It is further expressly understood by Contractor, that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the giving of the notice to proceed

If the Contractor believes that a postponement will cause a hardship to Contractor, Contractor may terminate the Contract with written notice to District within 10 days after receipt by Contractor of District's notice of postponement. It is further understood by Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and the grounds for notification and hardship shall be subject to Audit pursuant to Article 13.11. Should Contractor terminate the Contract as a result of a notice of postponement, District may award the Contract to the next lowest responsible bidder.

8.1.3 Computation of Time

The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.1.4 Float

Float is time the total number of days an activity may be extended or delayed without delaying the Completion Date shown in the schedule. Float will fall into three categories: (1) Rain Days; (2) Governmental Delays; and, (3) Project Float. Project Float and Rain Days are owned by the Project and may be utilized as necessary for critical path delays once the days become available for consumption (i.e. the Rain Day arrives and is not utilized since rain did not occur or Work was performed on the interior of

a building). However, Governmental Delay float shall not be utilized for purposes other than to address critical path delays that arise due to approvals, Inspector approvals or verifications on governmental forms.

8.1.4.1 *Governmental Delay Float*. It is anticipated that there will be governmental generated delays. Specific to DSA approvals, it is anticipated that no less than twelve (12) days per calendar year shall be set aside as Governmental Float to be utilized on critical path delays. A pro-rated number of days shall be calculated based on length of Contract Time. (For example, a two (2) year Contract Time shall require twenty-four (24) days of Governmental Float. If the Contract Time is 182 days, then the Contract Time shall require six (6) days of Governmental Float) This Governmental Delay float must be incorporated into the schedule and should be incorporated in each critical activity as Contractor deems fit. Specifically, major categories of Work under the DSA 152 (Project Inspection Card) should be allocated Governmental Delay Float at the Contractor's discretion. Governmental Delay Float on the Project may exceed 12 days per one (1) year period, but Contractor is required to include not be less than 12 days of Governmental Delay Float during each one (1) year period.

Contractor's failure to establish a protocol for requesting inspections is not grounds to utilize Governmental Delay Float. As noted in Article 3.1.4, 48 hours advance notice of commencing Work on a new area is required after submitting form DSA 156 and under PR 13-01 Special Inspection reports are not required to be posted until at least 14 days after the Work was inspected. Failure to plan, and pay (if applicable) for quicker delivery of Special Inspections is not Governmental Delay Float under Article 8.1.4.1. If Governmental Delay Float is not utilized, this float is carried through to other DSA 152 categories of inspection and consumed over the course of the Project

Governmental Delay Float may be utilized for a DSA Stop Work Order regardless of fault as defined under Education Code section 17307.5(b).

8.1.4.2 *Inclement Weather (Rain Days)*. The Contractor will only be allowed a time extension for unusually severe weather if it results in precipitation or other conditions which in the amount, frequency, or duration is in excess of the norm at the location and time of year in question as established by NOAA weather data. No less than 22 calendar days for each calendar year for Southern California will be allotted for in the Contractor's schedule for each winter weather period or carried at the end of the schedule as Rain Float. Float for weather days in other geographical regions shall be adjusted based on NOAA weather data for the geographical location. Contractor has anticipated all the days it takes to dry out and re-prepare areas that may be affected by weather delays which extend beyond the actual weather days. The weather days shall be shown on the schedule and if not used will become float for the Project's use. The Contractor will not be allowed a day-for-day weather delay for periods noted as float in the Schedule. The Contractor is expected to work seven (7) days per week (if necessary, irrespective of inclement weather), to maintain access, and to protect the Work under construction from the effects of inclement weather. Additional days beyond the NOAA shall be considered under the same criteria that weather days are granted below.

A Rain Day shall be granted by Architect or CM if the weather prevents the Contractor from beginning Work at the usual daily starting time, or prevents the Contractor from proceeding with seventy-five (75%) of the normal labor and equipment force towards completion of the day's current controlling item on the accepted schedule for a period of at least five hours, and the crew is dismissed as a result thereof, the Architect will designate such time as unavoidable delay and grant one (1) critical path activity calendar-day extension if there is no available float for the calendar year.

8.1.4.3 *Project Float*. The Contractor may determine some activities require a lesser duration than allocated and may set aside float in the Project Schedule. There shall be no early completion. Instead, to the extent float is either addressed at the end of the Project or throughout each category of critical path work, Project float may be used as necessary during the course of the Project and allocated on a first, come first serve basis. However, the use of float does not extend to Governmental Delay Float, which shall only be used for Governmental Delays.

8.2 HOURS OF WORK

8.2.1 Sufficient Forces

Contractors and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

8.2.2 Performance During Working Hours

Work shall be performed during regular working hours as permitted by the appropriate governmental agency except that in the event of an emergency, or when required to complete the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the District and approval of any required governmental agencies.

8.2.3 Costs for After Hours Inspections

If the Work done after hours is required by the Contract Documents, a Recovery Schedule, or as a result of the Contractor's failure to plan, and inspection must be conducted outside the Inspector's regular working hours, the costs of any after hour inspections, shall be borne by the Contractor.

If the District allows the Contractor to do Work outside regular working hours for the Contractor's convenience, the costs of any inspections required outside regular working hours shall be invoiced to the Contractor by the District and a Deductive Change Order shall be issued from the next Progress Payment.

If the Contractor elects to perform Work outside the Inspector's regular working hours, costs of any inspections required outside regular working hours shall be invoiced to the Contractor by the District and a Deductive Change Order from the next Progress Payment as a Deductive Change Order.

8.3 PROGRESS AND COMPLETION

8.3.1 Time of the Essence

Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.3.2 Baseline Schedule Requirements

8.3.2.1 *Timing*: Within ten (10) calendar days after Notice to Proceed, Contractor shall submit a practical schedule showing the order in which the Contractor proposes to perform the Work, and the dates on which the Contractor contemplates starting and completing the salient categories of the Work.

This first schedule which outlines the Contractor's view of the practical way in which the Work will be accomplished is the Baseline Schedule. If the Contractor Fails to submit the Baseline Schedule within the ten (10) days noted, then District may withhold processing and approval of progress payments pursuant to Article 9.4 and 9.6.

8.3.2.2 *District Review and Approval:* District, Architect and CM will review both a paper and electronic copy of Baseline Schedule and may provide comments as noted in this Article and either approve or disapprove the Baseline Schedule. All Schedules shall be prepared using an electronic scheduling program acceptable to District. All Schedules shall be delivered in an electronic format usable by the District. All logic ties and electronic information shall be included in the electronic copy of the Baseline Schedule that is delivered to the District.

8.3.2.3 *Schedule Must Be Within the Given Contract Time.* The Baseline Schedule shall not exceed time limits set forth in the Contract Documents and shall comply with all of the scheduling requirements as set forth in the Specifications and Contract Documents.

8.3.2.4 *Submittals Must Be Incorporated (See Articles 3.7 and 3.9)*: Contractor shall include Submittals as line items in the Baseline Schedule as required under Article 3.7.2 and 3.9.6. Submittals shall not delay the Work, Milestones, or the Completion Date. Failure to include Submittals in the Baseline Schedule shall be deemed a material breach by the Contractor.

8.3.2.5 *Float Must Be Incorporated*. The Baseline Schedule must indicate the beginning and completion of all phases of construction and shall use the "critical path method" (commonly called CPM) for the value reporting, planning and scheduling, of all Work required under the Contract Documents. The Baseline Schedule must incorporate all Milestones in the Project and apply Governmental Float at each Milestone in the Contractor's discretion. The Baseline Schedule shall incorporate any Schedule provided by the District as part of the bid and shall note durations that will not be adequate or should be shortened based on Contractor's review. These changes shall be identified and incorporated into Contractor's Baseline Schedule as long as requested changes are made within 10 days after the District chooses to move forward with the Project. Scheduling is necessary for the District's adequate monitoring of the progress of the Work and shall be prepared in accordance with the time frame described in this Article 8. The Architect may disapprove of any Schedule or require modification to it if, in the opinion of the Architect or District, adherence to the any Schedule prepared by the Contractor will not cause the Work to be completed in accordance with the Agreement.

8.3.2.6 *No Early Completion.* Contractor shall not submit any Schedule showing early completion without indicating float time through the date set for Project completion by District. Contractor's Baseline Schedule shall account for all days past early completion as float which belongs to the Project. Usage of float shall not entitle Contractor to any delay Claim or damages due to delay.

8.3.2.7 *Use of Schedule Provided in Bid Documents.* In some cases, the bid will include a preliminary schedule indicating Milestones and construction sequences for the Project along with general timing for the Project. The preliminary schedule is not intended to serve as the Baseline Schedule utilized for construction. It is up to the Contractor to study and develop a Baseline Schedule to address the actual durations and sequences of Work that is anticipated while maintaining the Milestones provided by the District. Contract shall obtain information from Contractor's Subcontractors and vendors on the planning, progress, delivery of equipment, coordination, and timing of availability of Subcontractors so a practical plan of Work is fully developed and represented in the Baseline Schedule.

8.3.2.8 *Incorrect Logic, Durations, Sequences, or Critical Path.* The District may reject or indicate durations, sequences, critical path or logic are not acceptable and request changes. The electronic copy of the Baseline Schedule shall have adequate information so logic ties, duration, sequences and critical path may be reviewed electronically. Contractor is to diligently rebuild and resubmit the Baseline Schedule to represent the Contractor's plan to complete the Work and maintain Milestones at the next progress meeting, or before the next progress meeting. If Contractor is not able to build a Baseline Schedule that is acceptable to the District or Architect, the District reserves the right to utilize the unapproved originally submitted Baseline Schedule (See Article 8.3.2.12) and the comments submitted to hold Contractor accountable for timely delivery of Work and maintenance of Milestones. Furthermore, Contractor's representations in the Baseline Schedule, if unacceptable, may also be used as a basis for termination of the Contract under Article 14 if Contractor fails to adequately maintain the Schedule and falls significantly behind without undertaking the efforts to either submit and follow a Recovery Schedule or fail to submit a Recovery Schedule and make no effort toward recovery on the Project.

8.3.2.9 *Contractor Responsibility Even if Schedule Issues Are Not Discovered.* Failure on the Part of the District to discover errors or omissions in any Schedules submitted shall not be construed to be an approval of the error or omission and any flawed Schedule is not grounds for a time extension.

8.3.2.9 Inclusions in Baseline Schedule. In addition to scheduling requirements set forth at Article 8.3.2, Contractor is specifically directed to include (broken out separately) in Contractor's Baseline Schedule and all Schedule updates, the following items required pursuant to these General Conditions, including but not limited to:

1. Rain Day Float (excluding inclement weather) as required under Article 8.1.4.2. For example, if the NOAA provides 22 days of Rain Days, all 22 days must be incorporated and noted in the Baseline Schedule. Further, any days required to clean-up or dry out shall be included for operations that are likely to require a clean-up or dry out period. Days that are not utilized shall be considered float owned by the Project.

2. Governmental Delay Float under Article 8.1.4.1. This Governmental Delay Float shall only be utilized for Governmental Delays and shall not be considered available float owned by the Project. This float shall only be distributed to the Project upon the completion of the Project and shall be used to offset Liquidated Damages and shall not generate compensable delays.

3. Submittal and Shop Drawing schedule under Article 3.9.

4. Deferred Approvals under Article 3.9.

5. Time for separate contractors, including furniture installation and start up activities, under Article 6.1.

6. Coordination and timing of any Drawings, approvals, notifications, permitting, connection, and testing for all utilities for the Project. (See Article 2.1.4).

7. Testing, special events, or school activities

8.3.2.10 *Failure to include Mandatory Schedule Items*. District may withhold payment pursuant to Articles 9.3, 9.4 and 9.6. In lieu of withholding payment for failure to include Mandatory Schedule Items, after the District or Architect has notified the Contractor of failure to meet the Baseline Schedule or Updated Schedule requirements and provided a written notification of this failure and provided a written notice of Schedule preparation errors, and the Contractor fails to correct the noted deficiencies or the Contractor does not provide an updated Baseline Schedule correcting the deficiencies, then Contractor shall not be granted an extension of time for failure to obtain necessary items and approvals under Article 8.3.2 and for the time required for failure to comply with laws, building codes, and other regulations (including Title 24 of the California Code of Regulations). Contractor shall maintain all required Article 8.3.2 Schedule items in the Baseline Schedule and indicate any days that have been used as allowed in Article 8. If Contractor fails to include all Article 8.3.2items in its Baseline Schedule or Schedule Updates and the District either utilizes an Unapproved Schedule under Article 8.3.2.12 or does not object to the inclusion of required scheduling items, then all mandatory Schedule inclusions, including float, shall be utilized in the District's discretion. If the Contract Time is exceeded, then Contractor shall be subject to the assessment of Liquidated Damages pursuant to Article 8.4.

8.3.2.11 *Failure to Meet Requirements*. Failure of the Contractor to provide proper Schedules as required by this Article and Article 9 is a material breach of the Contract and grounds for Termination pursuant to Article 14. The District, at its sole discretion, may choose, instead, to withhold, in whole or in part, any Progress Payments or Retention amounts otherwise payable to the Contractor.

8.3.2.12 *Use of an Unapproved Baseline Schedule*. If the Baseline Schedule submitted by the Contractor is unacceptable to the District (i.e. failing to meet the requirements of Article 8.3.2) and Contractor does not incorporate or address the written comments to the Baseline Schedule and a Baseline Schedule is not approved, but due to extreme necessity, the District moves forward without an approved Baseline Schedule, Contractor shall diligently revise and meet Schedule update requirements of Article 8 and incorporate all Article 8.3.2 comments in all updates). However, for purposes of Termination pursuant to Article 14, the unapproved Baseline Schedule initially submitted shall be treated as the Baseline Schedule with durations shortened or revised to accommodate all float, all mandatory Schedule requirements under Article 8.3.2, any requirements in the Contract Documents, and all revisions by the District or Architect.

8.3.3 Update Schedules

8.3.3.1 *Updates Shall Be Based on Approved Baseline Schedule*. Except in the case where there has not been agreement as to a Baseline Schedule, the approved Baseline Schedule shall be used to build future Schedule updates. Schedule updates shall be a CPM based Schedule consistent with the Baseline Schedule requirements of 8.3.2

In the case that no Baseline has been approved, Schedule updates shall be provided monthly and each update shall incorporate all comments and revisions noted as not complying with the requirements of Article 8.3.2. Contractor shall be held to the Article 8.3.2.12 unapproved Baseline Schedule, inclusive of all Milestones, float, comments and revisions by the District and Architect, all required Baseline Schedule Inclusions under Article 8.3.2, and any requirements in the Contract Documents.

8.3.3.2 *Schedule Updates*. Contractor shall update the approved Schedule each month to address actual start dates and durations, the percent complete on activities, actual completion dates,

estimated remaining duration for the Work in progress, estimated start dates for Work scheduled to start at future times and changes in duration of Work items

8.3.3.3 *Listing of Items Causing Delays*. Schedule updates shall provide a listing of activities which are causing delay in the progress of Work and a narrative shall be provided showing a description of problem areas, anticipated delays, and impacts on the Construction Schedule. Simply stating "District Delay" or "Architect Delay" shall be an inadequate listing. Delays shall only be listed if they meet the requirements of Article 8.4.

8.3.3.4 *Recovery Schedule*. In addition to providing a schedule update every thirty (30) days, the Contractor, if requested by the Architect or District, shall take the steps necessary to improve Contractor's progress and demonstrate to the District and Architect that the Contractor has seriously considered how the lost time, the Completion Date, or the Milestones that are required to be met within the terms of the Contract. Contractor shall immediately provide a Recovery Schedule showing how Milestones and the Completion Date will be met. In no case, shall a Recovery Schedule be provided later than ten (10) days following the request for a Recovery Schedule from the Architect or District.

a. Failure to Provide a Recovery Schedule. Shall subject Contractor to the assessment of Liquidated Damages for failure to meet the Contract Time. Refusal or failure to provide a Recovery Schedule shall be considered a substantial failure of performance and a material breach of Contract and may result in Termination of the Contract pursuant to Article 14.

b. Recovery Schedule Acceleration without Additional Cost. The District may require Contractor prepare a Recovery Schedule showing how the Project shall be accelerated, without any additional cost to the District. The District may order, without additional cost, the following:

   1. Increase the number of shifts;

   2. Utilize overtime to recover the approved Schedule; and/or

   3. Increase the days when Work occurs, including weekends, at the Project and at any manufacturer's plant.

c. Recovery Schedule Acceleration without Additional Cost. If Contractor disputes that the Recovery Schedule acceleration shall be issued without additional costs, the Contractor shall submit concurrent with Recovery Schedule acceleration notice pursuant to Articles 8.4.3 and 8.4.4.

8.4 EXTENSIONS OF TIME - LIQUIDATED DAMAGES

8.4.1 Liquidated Damages

CONTRACTOR AND DISTRICT HEREBY AGREE THAT THE EXACT AMOUNT OF DAMAGES FOR FAILURE TO COMPLETE THE WORK WITHIN THE TIME SPECIFIED IS EXTREMELY DIFFICULT OR IMPOSSIBLE TO DETERMINE. IF THE WORK IS NOT SUBSTANTIALLY COMPLETED IN THE TIME SET FORTH IN THE AGREEMENT, IT IS UNDERSTOOD THAT THE DISTRICT WILL SUFFER DAMAGES. IT BEING IMPRACTICAL AND

UNFEASIBLE TO DETERMINE THE AMOUNT OF ACTUAL DAMAGE, IT IS AGREED THE CONTRACTOR SHALL PAY TO THE DISTRICT THE AMOUNT LIQUIDATED DAMAGES SET FORTH IN THE AGREEMENT, FOR EACH CALENDAR DAY OF DELAY IN REACHING SUBSTANTIAL COMPLETION (SEE ARTICLE 1.1.46). CONTRACTOR AND ITS SURETY SHALL BE LIABLE FOR THE AMOUNT THEREOF PURSUANT TO GOVERNMENT CODE SECTION 53069.85.

8.4.2 Delay

Except and only to the extent provided under Article 7 and Article 8, by signing the Agreement, Contractor agrees to bear the risk of delays to Completion of the Work and that Contractor's bid for the Project was made with full knowledge of this risk.

In agreeing to bear the risk of delays to complete the Work, Contractor understands that, except and only to the extent provided otherwise in Article 7 and 8, the occurrence of events that delay the Work shall not excuse Contractor from its obligation to achieve Completion of the Project within the Contract Time, and shall not entitle the Contractor to an adjustment to the Contract time.

8.4.3 Excusable Delay

Contractor shall not be charged for Liquidated Damages because of any delays in completion of Work which are not the fault or negligence of Contractor or its Subcontractors, arising from Rain Float or Project Float, including acts of God, as defined in Public Contract Code section 7105, acts of enemy, epidemics and quarantine restrictions. Contractor shall within five (5) calendar days of beginning of any such delay notify District in writing of causes of delay; thereupon District shall ascertain the facts and extent of delay and grant extension of time for completing Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted after proper compliance with Article 8.3 requiring preparation and submission of a properly prepared CPM schedule.

8.4.3.1 *Excusable Delay Is Not Compensable*. No extended overhead, general conditions costs, impact costs, out-of-sequence costs or any other type of compensation, by any name or characterization, shall be paid to the Contractor for any delay to any activity not designated as a critical path item on the latest approved Project schedule.

8.4.3.2 *Notification*. The Contractor shall notify the Architect in writing of any anticipated delay and its cause, in order that the Architect may take immediate steps to prevent, if possible, the occurrence or continuance of delay, and may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

8.4.3.3 *Extension Request*. In the event the Contractor requests an extension of Contract time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work (See Article 7). When requesting time, i.e., extensions, for proposed Change Orders, they must be submitted with the proposed Change Order with full justification and documentation. If the Contractor fails to submit justification with the proposed Change Order it waives its right to a time extension at a later date. Such justification must be based on the official Contract schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the scope

of Work. Blanket or general claims for extra days without specific detailed information as required herein or a blanket or general reservation of rights do not fufill the requirements of this Article and shall be denied. The justification must include, but is not limited to, the following information:

a. The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform these activities within the stated duration.

b. Logical ties to the official Baseline Schedule or Approved Updated Schedule for the proposed changes and/or delay showing the activity/activities in the schedule whose start or completion dates are affected by the change and/or delay. (A fragnet of any delay of over ten (10) days must be provided.)

The Contractor and District understand and expressly agree that insofar as Public Contract Code section 7102 may apply to changes in the Work or delays under this Contract, the actual delays and damages, if any, and time extensions are intended to, and shall provide, the exclusive and full method of compensation for changes in the Work and construction delays.

8.4.4 Notice by Contractor Required

The Contractor shall within five (5) calendar days of beginning of any such delay notify the District in writing of causes of delay with justification and supporting documentation. In the case of a Recovery Schedule pursuant to Article 8.3.3.4, Contractor shall submit written notice concurrent with the Recovery Schedule. District will then ascertain the facts and extent of the delay and grant an extension of time for completing the Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of the Work affected by the delay and shall not apply to other portions of the Work not so affected.

Claims relating to time extensions shall be made in accordance with applicable provisions of Article 7.

8.4.4.1 *Adjustment for Compensable Delays*. The Schedule may be adjusted for a delay if, and only if, Contractor undertakes the following:

a. Contractor submits a timely COR or CO pursuant to the requirements of Article 7.

b. Contractor submits a fragnet showing the critical path delay caused by the COR, CO, Changed Condition, CCD, or ICD

c. Contractor has addressed all required float days in the Fragnet.

d. Contractor submits a complete breakdown of all costs incurred utilizing the format of Article 7.3.3

8.4.5 No Additional Compensation for Coordinating Governmental Submittals and the Resulting Work

CONTRACTOR HAS PLANNED ITS WORK AHEAD OF TIME AND IS AWARE THAT GOVERNMENTAL AGENCIES, SUCH AS THE GAS COMPANIES, ELECTRICAL UTILITY COMPANIES, WATER DISTRICTS AND OTHER AGENCIES MAY HAVE TO APPROVE CONTRACTOR PREPARED DRAWINGS OR APPROVE A PROPOSED INSTALLATION. CONTRACTOR HAS INCLUDED DELAYS AND DAMAGES WHICH MAY BE CAUSED BY SUCH AGENCIES IN CONTRACTOR'S BID AND HAS INCLUDED ADEQUATE TIME IN THE CONTRACTOR'S BASELINE SCHEDULE. FAILURE TO ADEQUATELY PLAN AND SCHEDULE IS NOT A BASIS TO USE GOVERNMENTAL DELAY FLOAT.

8.4.6 District Right to Accelerate the Work

The District may direct the Contractor to meet schedule requirements when the Work has been delayed. The District shall compensate the Contractor for the additional costs incurred by acceleration to the extent that such costs are directly attributable to the acceleration and are incurred through no fault or negligence of the Contractor.

8.4.6.1 *Management of Acceleration*. Contractor acceleration shall not include Work that is part of the scope of Work detailed in the Plans and Specifications. Instead, the acceleration costs shall be premium or overtime and quantifiable additional work added to the Project meant to accelerate the Project. Contractor is directed to keep consistent crews on the Project so time can be tracked. If crews are circulated off the Project or crews brought in only for overtime, the District may be charged for Contract Work and not accelerated time. In such case, the District may object to the costs submitted.

8.4.6.2 *Costs for Acceleration*. Cost for Acceleration shall be supported by backup documentation, and time sheets signed by the Inspector for each day work has been performed, at or near the time when the Work was performed. A listing on the time sheet shall document all labor, materials and services utilized that day and provide areas of work, and amount of work performed. Contractor shall comply with submission requirements of Article 7.7.

ARTICLE 9
PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

The Contract Sum or Contract Price is stated in the Agreement and, including authorized adjustments, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents.

9.2 COST BREAKDOWN

9.2.1 Required Information

Contractor shall furnish the following:

a. Within ten (10) days after Notice to Proceed, a detailed breakdown of the Contract Price (hereinafter "Schedule of Values") for each Project, Site, building, Milestone or other meaningful method to measure the level of Project Completion as determined by the District shall be submitted as a Submittal for the Project.;

b. Within ten (10) days after the date of the Notice to Proceed, a schedule of estimated monthly payment requests due the Contractor showing the values and construction time of the various portions of the Work to be performed by it and by its Subcontractors or material and equipment suppliers containing such supporting evidence as to its correctness as the District may require;

c. Within ten (10) days after the date of the Notice to Proceed, address, telephone number, telecopier number, California State Contractors License number, classification and monetary value of all subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

9.2.2 Information and Preparation of Schedule of Values

9.2.2.1 *Break Down of Schedule of Values*. Schedule of Values shall be broken down by Project, site, building, Milestone, or other meaningful method to measure the level of Project Completion as determined by the District.

9.2.2.2 *Based on Contractor Bid Costs.* The Schedule of Values shall be based on the costs from Contractor's bid to the District. However, the submission of the Schedule of Values shall not be front loaded so the Contractor is paid a greater value than the value of the Work actually performed and shall not shift funds from parts of the Project that are later to Work that is performed earlier.

9.2.2.3 Largest Dollar Value for Each Line Item. Identify Subcontractors and materials suppliers proposed to provide portions of Work equal to or greater than ten thousand dollars ($10,000) or one-half of one percent (0.5%) of their Contract Price, whichever is less.

9.2.2.4 *Allowances*. Any Allowances provided for in the Contract shall be a line item in the Schedule of Values.

9.2.2.5 *Labor and Materials Shall Be Separate*. Labor and Materials shall be broken into two separate line items unless specifically agreed in writing by the District.

9.2.3 District Approval Required

The District shall review all submissions received pursuant to Article 9.2 in a timely manner. All submissions must be approved by the District before becoming the basis of any payment.

9.3 PROGRESS PAYMENTS

9.3.1 Payments to Contractor

Unless there is a resolution indicating that the Work for the Project is substantially complex, within thirty-five (35) days after approval of the Request for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as certified by Architect and Inspector and verified by Contractor) up to the last day of the previous month, less the aggregate of previous payments. In the case of a Project designated substantially complex, the sum paid to the Contractor shall be equal to ninety percent (90%) of the value of the Work performed (as certified by the Architect and Inspector and verified by Contractor). The value of the Work completed shall be the Contractor's best estimate. Work completed as estimated shall be an approximation or estimate only and no mistake, inaccuracy, error or falsification in said any approved estimate shall operate to release the Contractor, or any Surety upon any bond, from damages arising from such Work, or from the District's enforcement of each and every provision of this Contract including but not limited to the Performance Bond and Payment Bond. The District shall have the right to subsequently to correct any mistake, inaccuracy, error or falsification made or otherwise set forth in any approved Request for Payment and such correction may occur in any future Payment Application or in the Retention Payment to the Contractor. No Surety upon any bond shall be relieved, released or exonerated of its obligations under this Contract or any applicable bond when the District is unable to correct an overpayment to the Contractor due to any abandonment by the Contractor or termination by the District.

The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for Work performed, so long as any lawful or proper direction given by the District concerning the Work, or any portion thereof, remains incomplete.

Notwithstanding anything to the contrary stated above, the Contractor may include in its Request for Payment the value of any structural steel, glue laminated beams, trusses, bleachers and other such custom-made materials prepared specifically for the Project and unique to the Project so long as all of the following requirements are satisfied:

a. The aggregate cost of materials stored off-site shall not exceed Twenty Five Thousand Dollars ($25,000) at any time or as otherwise agreed to be District in writing;

b. Title to such materials shall be vested in the District as evidenced by documentation satisfactory in form and substance to the District, including, without limitation, recorded financing statements, UCC filings and UCC searches;

c. With each Contractor Request for Payment, the Contractor shall submit to the District a written list identifying each location where materials are stored off-site (which must be a bonded warehouse) and the value of the materials at each location. The Contractor shall procure insurance satisfactory to the District (in its reasonable discretion) for materials stored off-site in an amount not less than the total value thereof;

d. The consent of any Surety shall be obtained to the extent required prior to payment for any materials stored off-site;

e. Representatives of the District shall have the right to make inspections of the storage areas at any time; and

f. Such materials shall be: (1) protected from diversion, destruction, theft and damage to the reasonable satisfaction of the District; (2) specifically marked for use on the Project; and (3) segregated from other materials at the storage facility.

9.3.2 Purchase of Materials and Equipment and Cost Fluctuations

The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from District to assure that there will be no delays. Contractor understands that materials fluctuate in value and shall have adequately addressed market fluctuations through agreements with Contractor vendors or by other means. Contractor further understands and incorporates into Contractor's bid cost any wage rate increases during the Project for the Contractor's labor force as well as all other Subcontractor and vendor labor forces. District shall not be responsible for market fluctuations in costs or labor rate increases during the Project. Contractor further has incorporated any and all cost increases in areas of Work where there may be schedule variations so that cost increases are not passed through to the District.

9.3.3 No Waiver

No payment by District hereunder shall be interpreted so as to imply that District has inspected, approved, or accepted any part of the Work. Contractor specifically understands that Title 24 Section 4-343 which states:

> "It is the duty of the contractor to complete the work covered by his or her contract in accordance with the approved Plans and Specifications therefore. The contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of such duties... In no case, however, shall the instruction of the Architect or registered Engineer be construed to cause work to be done with is not in conformity with the approved Plans, Specifications, and change orders..."

Notwithstanding any payment, the District may enforce each and every provision of this Contract which includes, but is not limited to, the Performance Bond and Payment Bond. The District may correct any error subsequent to any payment. In no event shall the Contractor or the Surety be released or exonerated from performance under this Contract when the District overpays the Contractor based upon any mistake, inaccuracy, error or falsification in any estimate that is included in any Request for Payment.

9.3.4 Issuance of Certificate of Payment

The Architect shall, within seven (7) days after receipt of the Contractor's Application for Payment, either approve such payment or notify the Contractor in writing of the Architect's reasons for withholding approval in whole or in part as provided in Article 9.6. The review of the Contractor's Application for Payment by the Architect is based on the Architect's observations at the Project and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. In some cases, the Architect may act upon or rely on the evaluation of the Work by the Inspector. This review of Payment Applications is sometimes called a "Pencil Draft." District's return of a Pencil Draft shall constitute the District's dispute of the Payment Application that has been submitted. Contractor shall promptly respond to Pencil Drafts or Contractor's Payment Applications may be delayed. Contractor's failure to promptly respond to a Pencil Draft shall qualify as a delay in the prompt payment of a Request for Payment or Request for Retention. The foregoing representations are subject to: (1) an evaluation of the Work for conformance with the Contract Documents, (2) results of subsequent tests and inspections, (3) minor deviations from the Contract Documents correctable prior to completion, and (4) specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute the Contractor's verified representation that the Contractor is entitled to payment in the amount certified.

9.3.5 Payment of Undisputed Contract Payments

In accordance with Public Contract Code section 7100, payments by the District to the Contractor for any and all undisputed amounts (including all Progress Payments, Final Payments or Retention Payment) is contingent upon submission of a proper and accurate Payment Application and the Contractor furnishing the District with a release of all Claims against the District related to such undisputed amounts. Disputed Contract Claims in stated amounts may be specifically excluded by the Contractor from the operation of the release. If, however, the Contractor specifically excludes any Claims, the Contractor shall provide details such as a specific number of disputed days or costs of any such exclusion in accordance with Articles 4.6 and 7.7.

9.4 APPLICATIONS FOR PROGRESS PAYMENTS

9.4.1 Procedure

9.4.1.1 *Application for Progress.* On or before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the Architect an itemized Application for Progress Payment for operations completed. Such application shall be notarized, if required, and supported by the following or such portion thereof as Architect requires:

1. The amount paid to the date of the Payment Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;

2. The amount being requested under the Payment Application by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

3. The balance that will be due to each of such entities after said payment is made;

4. A certification that the As-Built Drawings and Annotated Specifications are current;

5. Itemized breakdown of Work done for the purpose of requesting partial payment;

6. An updated or approved Baseline Schedule or other Schedule updates in conformance with Article 8;

7. Failure to submit an updated Schedule for the month or any previous month;

8. The additions to and subtractions from the Contract Price and Contract Time;

9. A summary of the Retention held;

10. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require from time to time;

11. The percentage of completion of the Contractor's Work by line item;

12. An updated Schedule of Values from the preceding Application for Payment;

13. Prerequisites for Progress Payments; and

14. Any other information or documents reasonably requested by the District, Architect, Inspector or CM (if applicable).

9.4.1.2 *First Payment Request.* The following items, if applicable, must be completed before the first payment request will be accepted for processing:

1. Installation of the Project sign;

2. Receipt by Architect of Submittals;

3. Installation of field office;

4. Installation of temporary facilities and fencing;

5. Submission of documents listed in the Article 9.2 relating to Contract Price breakdown;

6. Preliminary schedule analysis, due within 10 days after Notice to Proceed;

7. Contractor's Baseline Schedule (to be CPM based in conformance with Article 8);

8. Schedule of unit prices, if applicable;

9. Submittal Schedule;

10. Copies of necessary permits;

11. Copies of authorizations and licenses from governing authorities;

12. Initial progress report;

13. Surveyor qualifications;

14. Written acceptance of District's survey of rough grading, if applicable;

15. List of all Subcontractors, with names, license numbers, telephone numbers, and scope of work;

16. All bonds and insurance endorsements; and

17. Resumes of General Contractor's Project Manager, and if applicable, job site secretary, record documents recorder, and job site Superintendent.

9.4.1.3 *Second Payment Request.* The second payment request will not be processed until all Submittals and Shop Drawings have been accepted for review by the Architect.

9.4.1.4 *All Payment Requests.* No payment requests will be processed unless Contractor has submitted copies of the certified payroll records for the Work which correlates to the payment request and a proper CPM schedule pursuant to Article 8 is submitted.

9.4.1.5 *Final Payment Application (90% or 95%).* See Article 9.11.1

9.4.1.6 *Final Payment Application (100%).* See Article 9.11.3

9.5 STOP NOTICE CLAIMS AND WARRANTY OF TITLE

The Contractor warrants title to all Work. The Contractor further warrants that all Work is free and clear of liens, claims, security interests, stop notices, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Failure to keep work free of liens, stop notices, claims, security interests or encumbrances is grounds to make a claim against Contractor's Payment and Performance Bond to immediately remedy and defend.

If a lien or stop notice of any nature should at any time be filed against the Work or any District property, by any entity which has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by District and at Contractor's and Surety's own

expense, take any and all action necessary to cause any such lien or stop notice to be released or discharged immediately therefrom.

If the Contractor fails to furnish to the District within ten (10) calendar days after written demand by the District, satisfactory evidence that a lien or stop notice has been so released, discharged, or secured, then District may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract. In addition, any liens, stop notices, claims, security interests or encumbrances shall trigger the indemnification requirements under Article 3.15 and the Agreement Form, and shall act as a trigger under Civil Code section 2778 and 2779 requiring reimbursement for any and all costs following the District's written demand has been made. Any withholdings by the District for stop notices in accordance with Civil Code section 9358 shall not be a basis by the Contractor to make a Claim for interest penalties under Public Contract Code sections 7107 or 20104.50.

9.6 DECISIONS TO WITHHOLD PAYMENT

9.6.1 Reasons to Withhold Payment

The District may withhold payment in whole, or in part, to the extent reasonably necessary to protect the District if, in the District's opinion, the representations to the District required by Article 9.4 cannot be made. The District may withhold payment, in whole, or in part, to such extent as may be necessary to protect the District from loss because of, but not limited to:

a. Defective Work not remedied;

b. Stop notices served upon the District;

c. Liquidated Damages assessed against the Contractor;

d. The cost of Completion of the Contract if there exists reasonable doubt that the Work can be Completed for the unpaid balance of any Contract Price or by the completion date;

e. Damage to the District or other contractor;

f. Unsatisfactory prosecution of the Work by the Contractor;

g. Failure to store and properly secure materials;

h. Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, acceptable monthly progress schedules, Shop Drawings, Submittal schedules, Schedule of Values, Product Data and samples, proposed product lists, executed Change Order, Construction Change Documents, and verified reports;

i. Failure of the Contractor to maintain As-Built Drawings;

j. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Payment Application;

k. Unauthorized deviations from the Contract Documents (including but not limited to Unresolved Notices of Deviations (DSA Form 154));

l. Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.

m. Failure to properly pay prevailing wages as defined in Labor Code section 1720, et seq.;

n. Failure to properly maintain or clean up the Site;

o. Payments to indemnify, defend, or hold harmless the District;

p. Any payments due to the District including but not limited to payments for failed tests, or utilities changes or permits;

q. Failure to submit an acceptable Baseline Schedule or any Schedule or Schedule update in accordance with Article 8;

r. Failure to pay Subcontractor or suppliers as required by Article 9.8.1

s. Failure to secure warranties, including the cost to pay for warranties;

t. Failure to provide releases from material suppliers or Subcontractors when requested to do so;

u. Items deducted pursuant to Article 2.2;

v. Incomplete Punch List items under Article 9.9.1.1 which have gone through the Article 2.2 process; or

w. Allowances that have not been used.

9.6.2 Reallocation of Withheld Amounts

District may, in its discretion, apply any withheld amount to payment of outstanding claims or obligations as defined in Article 9.6.1 and 9.5. In so doing, District shall make such payments on behalf of Contractor. If any payment is so made by District, then such amount shall be considered as a payment made under Contract by District to Contractor and District shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligation. District will render Contractor an accounting of such funds disbursed on behalf of Contractor.

If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, District may, after ten (10) calendar days written notice to the Contractor and without prejudice to any other remedy make good such deficiencies. The District shall adjust the total Contract price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work which is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least 150% of the estimated reasonable value of the nonconforming Work) shall be made therefor.

9.6.3 Payment After Cure

When the grounds for declining approval are removed, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

9.7 NONCONFORMING WORK

Contractor shall promptly remove from premises all Work identified by District as failing to conform to the Contract whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract without additional expense to District and shall bear the expense of making good all Work of other contractors destroyed or damaged by such removal or replacement.

If Contractor does not remove such Work which has been identified by District as failing to conform to the Contract Documents within a reasonable time, fixed by written notice, District may remove it and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) calendar days' time thereafter, District may, upon ten (10) calendar days' written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

9.8 SUBCONTRACTOR PAYMENTS

9.8.1 Payments to Subcontractors

No later than ten (10) days after receipt, or pursuant to Business and Professions Code section 7108.5, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.8.2 No Obligation of District for Subcontractor Payment

The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

9.8.3 Payment Not Constituting Approval or Acceptance

An approved Request for Payment, a progress payment, a Certificate of Substantial Completion, or partial or entire use or occupancy of the Project by the District shall not constitute acceptance of Work that is not in accordance with the Contract Documents.

9.8.4 Joint Checks

District shall have the right, if necessary for the protection of the District, to issue joint checks made payable to the Contractor and Subcontractors and material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and a Subcontractor of any tier, any obligation from the District to such Subcontractor, or rights in such Subcontractor against the District. The District may choose to issue joint checks at District's sole

discretion and only after all the requirements of that particular school district and county are specifically met. Some school districts cannot issue joint checks, so the ability to issue joint checks depends on the school district and the specific circumstances.

9.9 COMPLETION OF THE WORK

9.9.1 Close-Out Procedures

9.9.1.1 *Incomplete Punch Items.* When the Contractor considers the Work Substantially Complete (See Article 1.1.46 for definition of Substantially Complete), the Contractor shall prepare and submit to the District a comprehensive list of minor items to be completed or corrected (hereinafter "Incomplete Punch Items" or "Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct the Incomplete Punch Items listed. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Contractor is aware that Title 24 Section 4-343(a) provides:

> "RESPONSIBILITIES. IT IS THE DUTY OF THE CONTRACTOR TO COMPLETE THE WORK COVERED BY HIS OR HER CONTRACT IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS THEREFOR. THE CONTRACTOR IN NO WAY IS RELIEVED OF ANY RESPONSIBILITY BY THE ACTIVITIES OF THE ARCHITECT, ENGINEER, INSPECTOR OR DSA IN THE PERFORMANCE OF SUCH DUTIES.

9.9.1.2 *Punch List Is Prepared Only After the Project Is Substantially Complete.* If any of the conditions noted in Article 1.1.46 as defining Substantial Completion are not met, the Inspector, Architect or District may reject Contractor's Incomplete Punch Items as premature. If the Architect and Inspector commence review of Incomplete Punch Items, all rights are reserved until the Project actually meets the definition of Substantially Complete. Liquidated Damages, warranties, and other contractual rights are not affected by Incomplete Punch Items unless otherwise addressed in these General Conditions.

Once the Inspector and the Architect determine the Project is Substantially Complete, a Certificate of Substantial Completion shall be issued. The Inspector and Architect shall prepare a Punch List of items which is an inspection report of the Work, if any, required in order to complete the Contract Documents and ensure compliance with the DSA Approved Plans so the Project may be Completed by the Contractor and a final DSA Close-Out is approved. When all Work for the Project is Complete, including Punch Lists and all Work complies with the approved Contract Documents and Change Orders, the Project has reached Final Completion.

9.9.1.3 *Time for Completion of Punch List.* Contractor shall only be given a period of no more than thirty (30) days to complete the Punch List for the Project. During the Punch List period, the Contractor's Superintendent and Project Manager shall remain engaged in the Project and shall not be removed or replaced. If the Punch List is not completed at the end of the Punch List time then Contractor shall issue a valued Punch List within 5 days after the date the Punch List time ends. If Contractor does not issue such a list, the District or Architect may issue a valued Punch List to the Contractor and withhold up to 150% of the value of the Punch List Work pursuant to Article 2.2 of this Agreement.

Failure to issue a timely written request for additional time to complete Punch List shall result in the deletion of the remaining Punch List Work pursuant to Article 2.2 and the issuance of a Deductive Change Order.

a. Extension of Time to Complete Punch List. If Contractor cannot finish the Punch List Work during the time period allotted under Article 9.9.1.3, the Contractor may make a written request for a Non-Compensable Punch List time extension accompanied by an estimate of the number of additional days it will take to complete the Punch List Work for a written consent from the District to allow continued Punch List Work. Punch List time extensions are a maximum of thirty (30) days for each request and must be accompanied by an itemized valued Punch List.

b. If there is no valued Punch List accompanying any request or if Contractor intends to undertake Punch List without the continued support and supervision of its Superintendent and Project Manager (as required under Article 3.2), the District, Construction Manager or Architect may issue a valued Punch List, reject the Punch List Time Extension and deduct 150% of the valued Punch List pursuant to Article 2.2 and proceed to Close-Out the Project. Contractor shall cease work on the Project and proceed to complete Contractor's Retention Payment Application and complete the Work for the Project required pursuant to Article 9.11.3.

9.9.1.4 *District Rejection of Written Request for Punch List Time Extensions*. Following sixty (60) Days of Punch List under Article 9.9.1.3, the District has the option of rejecting Punch List Time Extension requests. The District may proceed under Article 2.2 and deduct the value of remaining Punch List Work pursuant to Article 2.2. If the District rejects the Punch List Time Extension request then Contractor shall cease Work on the Project and proceed to Final Inspection pursuant to Article 9.11.2.

9.9.1.5 *Punch List Liquidated Damages to Compensate for Added District Project Costs.* If the total time utilized for Punch List exceeds sixty (60) days [the thirty (30) day period under Article 9.9.1.3 plus an additional thirty (30) day period that has been requested in writing], and the District grants an additional written Punch List Time Extension that exceeds sixty (60) days of Punch List, then Contactor shall be charged Liquidated Damages of at least $750 per day for continued Punch List Work to partially compensate the Inspector, Architect, and Construction Manager's extended time on the Project. This Punch List Liquidated Damage number is based on anticipated cost for an Inspector on site and additional costs for the Architect and Construction Manager to reinspect Punch List items and perform the administration of the Close-out.

Contractor received thirty (30) days without any charges for Punch List Liquidated Damages and is placed on notice pursuant to this Article 9.9.1.5 that $750 is due for each day of Punch List that exceeds sixty (60) days at $750, a cost much lower than typical (and actual) costs for Inspection, Architect and Construction Manager time required during Punch List. Starting at ninety (90) days of Punch List (an excessive number of days to complete Punch List), the District shall be entitled to adjust Punch List Liquidated Damages to an estimate of the actual costs incurred to oversee, monitor and inspect the Punch List. If costs exceed $750 per day, the anticipated extended contract charges for Inspection, Architect, Construction Manager, and any other costs that will be incurred due to the extended Punch List shall be itemized and a daily rate of Punch List Liquidated Damages shall be presented in writing to the Contractor within five (5) days following the receipt of a written request for Punch List Time Extension by the Contractor that extends the Punch List time beyond ninety (90) days. This written notice of actual Punch List Liquidated Damages may be provided to the Contractor at any time following the first written request for Punch List Time extension requested under Article 9.9.1.3. The adjusted actual Punch List Liquidated

Damage amount shall be applicable as Punch List Liquidated Damages commencing on the ninetieth (90th) day of Punch List.

9.9.2 Close-Out Requirements for Final Completion of the Project

a. Utility Connections. Buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected

b. As-Builts Up to Date and Complete. The intent of this procedure is to obtain an exact "As-Built" record of the Work upon completion of the project. The following information shall be carefully and correctly drawn on the prints and all items shall be accurately located and dimensioned from finished surfaces of building walls on all As-Built Drawings

1. The exact location and elevations of all covered utilities, including valves, cleanouts, etc. must be shown on As-Built Drawings

2. Contractor is liable and responsible for inaccuracies in As-Built Drawings, even though they become evident at some future date.

3. Upon completion of the Work and as a condition precedent to approval of Retention Payment, Contractor shall obtain the Inspector's approval of the "As-Built" information. When completed, Contractor shall deliver corrected sepias and/or a Diskette with an electronic file in a format acceptable to the District.

4. District may withhold the cost to hire a draftsman and potholing and testing service to complete Record As-Built Drawings at substantial cost if the Contractor does not deliver a complete set of Record As-Built Drawings. This shall result in withholding of between $10,000 to $20,000 per building that does not have a corresponding Record As Built Drawing.

c. Any Work not installed as originally indicated on Drawings

d. All DSA Close-Out requirements (See DSA Certification Guide) Contractor is also specifically directed to Item 3.2 in the DSA Certification Guide and the applicable certificates for the DSA-311 form.

e. Submission of Form 6-C. Contractor shall be required to execute a Form 6-C as required under Title 24 Sections 4-343. The Contractor understands that the filing with DSA of a Form 6-C is a requirement to obtain final DSA Approval of the construction by Contractor and utilized to verify under penalty of perjury that the Work performed by Contractor complies with the DSA approved Contract Documents. The failure to file a DSA Form 6C has two consequences. First, the Construction of the Project will not comply with the design immunity provisions of Government Code section 830.6 and exposes the District and the individual Board members to personal liability for injuries that occur on the Project.

Secondly , under DSA IR A-20, since the Project cannot be Certified by DSA, no future or further Projects will be authorized so Contractor will have essentially condemned the campus from any future modernization or addition of new classrooms through their failure to file the DSA Form 6C.

1. *Execution of the DSA Form 6-C is Mandatory*. Refusal to execute the Form 6-C, which is a Final DSA Verified Report that all Work performed complies with the DSA approved Contract Documents is a violation of Education Code section 17312 and shall be referred to the Attorney General for Prosecution.

2. *Referral to the District Attorney for Extortion*. If the Contractor's refusal to execute the DSA Form 6C is to leverage a Dispute, Claim or litigation, then the matter shall also be referred to the District Attorney for prosecution for extortion.

3. *Contractor shall be Responsible for All Costs to Certify the Project*. The District may certify the Project complies with Approved Plans and Specifications by utilizing the procedures under the Project Certification Guide (located at the DSA website). All costs for professionals, inspection, and testing required for an alternate Project Certification shall be the Contractor's responsibility and the District reserves its right to institute legal action against the Contractor and Contractor's Surety for all costs to certify the Project and all costs to correct Non-Compliant Work that is discovered during the Alternate Certification Process.

f. ADA Work that must be corrected to receive DSA certification. See Article 12.2.

g. Maintenance Manuals. At least thirty (30) days prior to final inspection, three (3) copies of complete operations and maintenance manuals, repair parts lists, service instructions for all electrical and mechanical equipment, and equipment warranties shall be submitted. All installation, operating, and maintenance information and Drawings shall be bound in 8½" x 11" binders. Provide a table of contents in front and all items shall be indexed with tabs. Each manual shall also contain a list of Subcontractors, with their addresses and the names of persons to contact in cases of emergency. Identifying labels shall provide names of manufactures, their addresses, ratings, and capacities of equipment and machinery.

1. Maintenance manuals shall also be delivered in electronic media for the Project. Any demonstration videos shall also be provided on electronic media.

h. Inspection Requirements. Before calling for final inspection, Contractor shall determine that the following Work has been performed:

1. The Work has been completed;

2. All fire/ life safety items are completed and in working order;

3. Mechanical and electrical Work complete, fixtures in place, connected and tested;

4. Electrical circuits scheduled in panels and disconnect switches labeled;

5. Painting and special finishes complete;

6. Doors complete with hardware, cleaned of protective film relieved of sticking or binding and in working order;

7. Tops and bottoms of doors sealed;

8. Floors waxed and polished as specified;

9. Broken glass replaced and glass cleaned;

10. Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site;

11. Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material;

12. Finished and decorative work shall have marks, dirt and superfluous labels removed;

13. Final cleanup, as in Article 3.12;

14. All Work pursuant to Article 9.11.2; and

15. Furnish a letter to District stating that the District's Representative or other designated person or persons have been instructed in working characteristics of mechanical and electrical equipment.

9.9.3 Costs of Multiple Inspections

More than two (2) requests of the District to make inspections required under Article 9.9.1 shall be considered an additional service of Architect, Inspector, Engineer or other consultants shall be the Contractor's responsibility pursuant to Article 4.5 and all subsequent costs will be prepared as a Deductive Change Order.

9.10 PARTIAL OCCUPANCY OR USE

9.10.1 District's Rights

The District may occupy or use any completed or partially completed portion of the Work at any stage. The District and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. If District and Contractor cannot agree as to responsibilities such disagreement shall be resolved pursuant to

Article 4.6. When the Contractor considers a portion complete, the Contractor shall prepare and submit a Punch List to the District as provided under Article 9.9.1.

9.10.2 Inspection Prior to Occupancy or Use

Immediately prior to such partial occupancy or use, the District, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.10.3 No Waiver

Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.11 COMPLETION AND FINAL PAYMENT

9.11.1 Final Payment (90% Billing if Substantially Complex Finding and 95% Billing If No Finding Is Made)

The following items must be completed before the Final Payment Application will be accepted for processing at Substantial Completion of the Project:

a. Inspector sign-off of each item in the DSA 152 Project Inspection Card;

b. The Project has reached the Punch List items under Article 9.9.1.2 and the Project has been determined to be Substantially Complete under Article 1.1.46;

c. Removal of temporary facilities and services;

d. Testing, adjusting and balance records are complete;

e. Removal of surplus materials, rubbish, and similar elements;

f. Changeover of door locks;

g. Deductive items pursuant to Article 9.6 and Article 2.2; and

h. Completion and submission of all final Change Orders for the Project.

9.11.2 Final Inspection (Punch List Completion)

Contractor shall comply with Punch List procedures under Article 9.9.1.1, and maintain the presence of Project Superintendent and Project Manager (not replacement project superintendent or project manager) until the Punch List is complete to ensure proper and timely completion of the Punch List. Under no circumstances shall Contractor demobilize its forces prior to completion of the Punch List.

Upon completion of the Work under Article 9.9.1, the Contractor shall notify the District and Architect, who shall again inspect such Work. If the Architect and the District find the Work contained in the Punch List acceptable under the Contract Documents, the Work shall have reached Final Completion.

Architect shall notify Contractor, who shall then submit to the Architect its Application for Retention Payment. This Application for Retention Payment shall contain any deductions under Article 9.6, including but not limited to incomplete Punch List items under Article 9.9.1.

Upon receipt and approval of Application for Retention Payment, the Architect shall issue a Form 6 stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The District shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (which, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of payment from the District, pay the amounts due Subcontractors.

If the Architect and the District find that the Work contained in the Punch List is unacceptable, then Contractor shall issue a valued Punch List within 5 days after the date the Punch List time ends. If Contractor does not issue such a list, the District or Architect may issue a valued Punch List to the Contractor and withhold up to 150% of the value of the Punch List Work pursuant to Article 2.2 of this Agreement.

9.11.3 Retainage (100% Billing for the Entire Project)

The retainage, less any amounts disputed by the District or which the District has the right to withhold pursuant to the Contract Documents (including but not limited to incomplete Punch List items under Article 9.9.1), shall be paid after approval by the District of the Application for Retention Payment, after the satisfaction of the conditions set forth in Article 9, the Final Inspection under Article 9.11.2 is completed, and after thirty-five (35) days after the acceptance of the Work and recording of the Notice of Completion by District. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any escrow agreement between the District and the Contractor.

a. Procedures for Application for Retention Payment. The following conditions must be fulfilled prior to release of Retention Payment:

1. A full and final waiver or release of all stop notices in connection with the Work shall be submitted by Contractor, including a release of stop notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.

2. The Contractor shall have made all corrections, including all Punch List Items, to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.

3. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, releases from the Surety and warranty bonds (if applicable) required by the Contract Documents for its portion of the Work.

4. Contractor must have completed all requirements set forth in Article 9.9

5. Contractor must have issued a Form 6C for the Project.

6. The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.

7. The Contractor shall have completed final clean up as required by Article 3.12

8. Contractor shall have all deductive items under Article 9.6 and Article 2.2 submitted as part of the Retention Payment.

9.11.4 Recording of a Notice of Completion After Punch List Period and Final Inspection.

When the Work, or designated portion thereof, is complete or the District has completed the Article 9.6and/or the Article 2.2 process, whichever occurs first, the District will file either a Notice of Completion or a Notice of Completion noting valued Punch List items. Valued Punch List items will be deducted from the Retention Payment.

During the time when Work is being performed on the Punch List, the Project does not meet the definition of "Complete" under Public Contract Code section 7107(c)(1) even if there is "beneficial occupancy" of the Project since that has been no "cessation of labor" on the Project. Completion of Punch List under this Article is not "testing, startup, or commissioning by the public entity or its agent." In other words, the continuing Punch List Work is Contractor labor on the Project until each and every item of Punch List Work is complete or the time periods under Article 9.9.1 have expired.

9.11.5 Warranties

Warranties required by the Contract Documents shall commence on the date of Completion of the entire Work. Warranty periods DO NOT commence at Substantial Completion or when a particular Subcontractor work is complete. No additional charges, extras, Change Orders, or Claims may be sought for warranties commencing from the Notice of Completion.

District shall have the right to utilize equipment, test, and operate as necessary for acclimation, or testing without voiding or starting warranties. Taking beneficial occupancy shall not start warranties except in the case where the District agrees, in writing, that warranties shall commence running or where the District is taking phased occupancy of specific buildings or areas and completes separate Punch Lists as further addressed in Article 4.2.7.

9.11.6 Time for Submission of Application for Final Payment and Retention Payment (Unilateral Processing of Final and Retention Payment Application).

If Contractor submits a Final Payment Application which fails to include deductive items under Article 9.6, the District or Architect shall note this defective request for Final Payment Application. The Contractor shall be notified that specific deductive items shall be included in the Final Payment Application. If Contractor either continues to submit the Final Payment Application without deductive items under Article 9.6, or a period of 14 calendar days passes after Contractor is provided written notice of deductive items for inclusion in Final Payment Application, then District may either alter the Final Payment Application and recalculate the math on the Final Payment Application to address the Article 9.6 deductive items or process a unilateral Final Payment Application.

9.11.7 Unilateral Release of Retention

After the recordation of the Notice of Completion, or within sixty (60) days following the completion of the Punch List or the expiration of the time for completion of Punch List under Article 9.9.1, if Contractor does not make an Application for Release of Retention, the District may unilaterally release retention less any deducts under Article 9.6 and/or Article 2.2, withholds due to stop notices, or withholdings due to other defective Work on the Project. District may also choose to unilaterally release Retention after deduction of 150% of any disputed items, which may also include items under Article 9.6 and 2.2. If a deduction pursuant to Article 9.6 is made from Retention, a letter deducting specific valued items shall be considered a notice of Default under the terms of the Escrow Agreement.

9.12 SUBSTITUTION OF SECURITIES

The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300 as set forth in the form contained in the Bid Documents.

ARTICLE 10
PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor Responsibility

The Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and Work performed until completion and final acceptance by the District. All Work shall be solely at the Contractor's risk, with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code section 7105(b)(2).

Contractor shall take, and require Subcontractor to take, all necessary precautions for safety of workers on the Work and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes, Contractor shall furnish, erect and properly maintain at all times, as directed by District or Architect or required by conditions and progress of Work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. Contractor shall designate a responsible member of its organization on the Work, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety and health of workers. The name and position of person so designated shall be reported to District by Contractor. Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, such violation shall be corrected promptly.

10.1.2 Subcontractor Responsibility

Contractor shall require that Subcontractors participate in, and enforce, the safety and loss prevention programs established by the Contractor for the Project, which will cover all Work performed by the Contractor and its Subcontractors. Each Subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

10.1.3 Cooperation

All Subcontractors and material or equipment suppliers shall cooperate fully with Contractor, the District, and all insurance carriers and loss prevention engineers.

10.1.4 Accident Reports

Subcontractors shall immediately, within two (2) days, report in writing to the Contractor all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Site, which caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported within four (4) days by telephone or messenger. Contractor shall thereafter immediately, within two (2) days, report the facts in writing to the District and the Architect giving full details of the accident.

10.1.5 First-Aid Supplies at Site

The Contractor will provide and maintain at the Site first-aid supplies which complies with the current Occupational Safety and Health Regulations.

10.1.6 Material Safety Data Sheets and Compliance with Proposition 65

Contractor is required to have material safety data sheets available in a readily accessible place at the job site for any material requiring a material safety data sheet per the Federal "hazard communication" standard, or employees' "right-to-know law." The Contractor is also required to properly label any substance brought into the job site, and require that any person working with the material, or within the general area of the material, is informed of the hazards of the substance and follows proper handling and protection procedures.

Contractor is required to comply with the provisions of California Health and Safety Code section 25249, et seq., which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Contractor agrees to familiarize itself with the provisions of this Section, and to comply fully with its requirements.

10.1.7 Non-Utilization of Asbestos Material

NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING, OR EQUIPMENT USED TO EFFECT THIS CONSTRUCTION.

Asbestos and/or asbestos-containing products shall be defined as all items containing, but not limited to, chrysotile, amosite, anthophyllite, tremolite, and antinolite.

Any or all material containing greater than one-tenth of one percent (>.1%) asbestos shall be defined as asbestos-containing material.

All Work or materials found to contain asbestos or Work or material installed with asbestos-containing equipment will be immediately rejected and this Work will be removed at no additional cost to the District.

Decontamination and removal of Work found to contain asbestos or Work installed with asbestos-containing equipment shall be done only under supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency.

The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant, who shall have sole discretion and final determination in this matter.

The asbestos consultant shall be chosen and approved by the District, who shall have sole discretion and final determination in this matter.

The Work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

Interface of Work under this Contract with Work containing asbestos shall be executed by the Contractor at his risk and at his discretion, with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos-containing products. By execution of this Contract, the Contractor acknowledges the above and agrees to hold harmless District and its assigns for all asbestos liability which may be associated with this work and agrees to instruct his employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor

The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

a. Employees on the Work and other persons who may be affected thereby;

b. The Work, material, and equipment to be incorporated therein, whether in storage on or off the Site, under the care, custody, or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

c. Other property at the Site or adjacent thereto such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

Contractor is constructive owner of Project site as more fully discussed in Article 6.2.

10.2.2 Contractor Notices

The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

10.2.3 Safety Barriers and Safeguards

The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.4 Use or Storage of Hazardous Material

When use or storage of explosives, other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on

such activities under supervision of properly qualified personnel. The Contractor shall notify the District any time that explosives or hazardous materials are expected to be stored on Site. Location of storage shall be coordinated with the District and local fire authorities.

10.2.5 Protection of Work

The Contractor and Subcontractors shall continuously protect the Work, the District's property, and the property of others, from damage, injury, or loss arising in connection with operations under the Contract Documents. The Contractor and Subcontractors, at their own expense, shall make good any such damage, injury, or loss, except such as may be solely due to, or caused by, agents or employees of the District.

The Contractor, at Contractor's expense, will remove all mud, water, or other elements as may be required for the proper protection and prosecution of its Work.

Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations. All permits, licenses, or inspection fees required for such repair Work shall be obtained and paid for by Contractor.

10.2.6 Requirements for Existing Sites

Contractor shall (unless waived by the District in writing):

a. When performing construction on existing sites, become informed and take into specific account the maturity of the students on the Site; and perform Work which may interfere with school routine before or after school hours, enclose working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities. The Contractor shall comply with Specifications and directives of the District regarding the timing of certain construction activities in order to avoid unnecessary interference with school functioning.

b. Avoid performing any Work that will disturb students during testing.

c. Provide substantial barricades around any shrubs or trees indicated to be preserved.

d. Deliver materials to building area over route designated by Architect.

e. Take preventive measures to eliminate objectionable dust, noise, or other disturbances.

f. Confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Architect; and not interfere with the Work or unreasonably encumber premises or overload any structure with materials; and enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on the Project site.

g. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved land surveyor or civil engineer and all maps and records required therefrom shall be filed with county and local authorities, at no cost to the District. All filing and plan check fees shall be paid by Contractor.

h. Provide District on request with Contractor's written safety program and safety plan for each site.

10.2.7 Shoring and Structural Loading

The Contractor shall not impose structural loading upon any part of the Work under construction or upon existing construction on or adjacent to the Site in excess of safe limits, or loading such as to result in damage to the structural, architectural, mechanical, electrical, or other components of the Work. The design of all temporary construction equipment and appliances used in construction of the Work and not a permanent part thereof, including, without limitation, hoisting equipment, cribbing, shoring, and temporary bracing of structural steel, is the sole responsibility of the Contractor. All such items shall conform with the requirements of governing codes and all laws, ordinances, rules, regulations, and orders of all authorities having jurisdiction. The Contractor shall take special precautions, such as shoring of masonry walls and temporary tie bracing of structural steel Work, to prevent possible wind damage during construction of the Work. The installation of such bracing or shoring shall not damage the Work in place or the Work installed by others. Any damage which does occur shall be promptly repaired by the Contractor at no cost to the District.

10.2.8 Conformance within Established Limits

The Contractor and Subcontractors shall confine their construction equipment, the storage of materials, and the operations of workers to the limits indicated by laws, ordinances, permits, and the limits established by the District or the Contractor, and shall not unreasonably encumber the premises with construction equipment or materials.

10.2.9 Subcontractor Enforcement of Rules

Subcontractors shall enforce the District's and the Contractor's instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Site.

10.2.10 Site Access

The Contractor and the Subcontractors shall use only those ingress and egress routes designated by the District, observe the boundaries of the Site designated by the District, park only in those areas designated by the District, which areas may be on or off the Site, and comply with any parking control program established by the District, such as furnishing license plate information and placing identifying stickers on vehicles.

10.2.11 Security Services.

The Contractor shall be responsible for providing security services for the Site as needed for the protection of the Site and as determined in the District's sole discretion.

10.3 EMERGENCIES

10.3.1 Emergency Action

In an emergency affecting the safety of persons or property, the Contractor shall take any action necessary, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 7.

10.3.2 Accident Reports

The Contractor shall promptly report in writing to the District all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses in conformance with Article 10.1.4. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported in accordance with Article 10.1.4, immediately by telephone or messenger to the District.

10.4 HAZARDOUS MATERIALS

10.4.1 Discovery of Hazardous Materials

In the event the Contractor encounters or suspects the presence on the job site of material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by § 25249.5 of the California Health and Safety Code, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the District and the Architect in writing, whether or not such material was generated by the Contractor or the District. The Work in the affected area shall not thereafter be resumed, except by written agreement of the District and the Contractor, if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, polychlorinated biphenyl (PCB), or other hazardous material, or when it has been rendered harmless by written agreement of the District and the Contractor.

10.4.2 Hazardous Material Work Limitations

In the event that the presence of hazardous materials is suspected or discovered on the Site (except in cases where asbestos and other hazardous material Work in the Contractor's responsibility), the District shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required pursuant to Article 7 to perform without consent any Work in the affected area of the Site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by District, as certified by an independent testing laboratory and approved by the appropriate government agency.

10.4.3 Indemnification by Contractor for Hazardous Material Caused by Contractor

In the event the hazardous materials on the Project Site is caused by the Contractor, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the District for any additional costs incurred as a result of Contractor's generation of hazardous material on the Project Site. In addition, the Contractor shall defend, indemnify and hold harmless District and its agents, officers, and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Project Site.

10.4.4 Terms of Hazardous Material Provision

The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of this Contract.

ARTICLE 11
INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 Insurance Requirements

Before the commencement of the Work, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in California with a financial rating of at least an A-VIII status as rated in the most recent edition of Best's Insurance Reports or as amended by the Supplementary General Conditions, such insurance as will protect the District from claims set forth below, which may arise out of or result from the Contractor's Work under the Contract and for which the Contractor may be legally liable, whether such Work are by the Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Any required insurance shall not contain any exclusion that applies to the type of work performed by the Contractor under the Contract Documents.

a. Claims for damages because of bodily injury, sickness, disease, or death of any person District would require indemnification and coverage for employee claim;

b. Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor or by another person;

c. Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;

d. Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;

e. Claims involving contractual liability applicable to the Contractor's obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Contractor and the Subcontractors; and

f. Claims involving Completed Operations, Independent Contractors' coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating. (XCU)

g. Claims involving sudden or accidental discharge of contaminants or pollutants.

11.1.2 Specific Insurance Requirements

Contractor shall take out and maintain and shall require all Subcontractors, if any, whether primary or secondary, to take out and maintain:

Comprehensive General Liability Insurance with a combined single limit per occurrence of not less than $2,000,000.00 or Commercial General Liability Insurance which provides limits of not less than:

(a)	Per occurrence (combined single limit)	$2,000,000.00
(b)	Project Specific Aggregate (for this Project only)	$2,000,000.00
(c)	Products and Completed Operations (aggregate)	$2,000,000.00
(d)	Personal and Advertising Injury Limit	$1,000,000.00

Insurance Covering Special Hazards

The following Special hazards shall be covered by riders or riders to above mentioned public liability insurance or property damage insurance policy or policies of insurance, in amounts as follows:

(a)	Automotive and truck where operated in amounts	$1,000,000.00
(b)	Material Hoist where used in amounts	$1,000,000.00
(c)	Explosion, Collapse and Underground (XCU coverage)	$1,000,000.00
(d)	Hazardous Materials	$1,000,000.00

In addition, provide Excess Liability Insurance coverage in the amount of Four Million Dollars ($4,000,000.00).

11.1.3 Subcontractor Insurance Requirements

The Contractor shall require its Subcontractors to take out and maintain public liability insurance and property damage insurance required under Article 11.1 in like amounts. A "claims made" or modified "occurrence" policy shall not satisfy the requirements of Article 11.1 without prior written approval of the District.

11.1.4 Additional Insured Endorsement Requirements

The Contractor shall name, on any policy of insurance required under Article 11.1, the District, CM, Architect, Inspector, the State of California, their officers, employees, agents, volunteers and independent contractors as additional insureds. Subcontractors shall name the Contractor, the District, Architect, Inspector, the State of California, their officers, employees, agents, volunteers and independent contractors as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion, and must state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Contractor pursuant to 11.1 must be designated in the policy as primary to any insurance obtained by the District. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

11.2 WORKERS' COMPENSATION INSURANCE

During the term of this Contract, the Contractor shall provide workers' compensation and employer's liability insurance for all of the Contractor's employees engaged in Work under this Contract on or at the Site of the Project and, in case any of the Contractor's Work is subcontracted, the Contractor shall require the Subcontractor to provide workers' compensation insurance for all the Subcontractor's employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in Work under this Contract on or at the Site of the Project is not protected under the Workers' Compensation laws, the Contractor shall provide or cause a Subcontractor to provide insurance coverage for the protection of those employees not otherwise protected. The Contractor shall file with the District certificates of insurance as required under Article 11.6 and in compliance with Labor Code § 3700.

Workers' compensation limits as required by the Labor Code, but not less than $1,000,000 and employers' liability limits of $1,000,000 per accident for bodily injury or disease.

11.3 BUILDER'S RISK/ "ALL RISK" INSURANCE

11.3.1 Course-of-Construction Insurance Requirements

The Contractor, during the progress of the Work and until final acceptance of the Work by District upon completion of the entire Contract, shall maintain Builder's Risk, Course of Construction or similar first party property coverage issued on a replacement cost value basis consistent with the total replacement cost of all insurable Work and the Project included within the Contract Documents. Coverage is to insure against all risks of accidental direct physical loss, and must include, by the basic grant of coverage or by endorsement, the perils of vandalism, malicious mischief (both without any limitation regarding vacancy or occupancy), fire, sprinkler leakage, civil authority, sonic boom, earthquake, flood,

collapse, wind, lightning, smoke and riot. The coverage must include debris removal, demolition, increased costs due to enforcement of building ordinance and law in the repair and replacement of damage and undamaged portions of the property, and reasonable costs for the Architect's and engineering services and expenses required as a result of any insured loss upon the Work and Project which is the subject of the Contract Documents, including completed Work and Work in progress, to the full insurable value thereof. Such insurance shall include the District and the Architect as additional named insureds, and any other person with an insurable interest as designated by the District.

The Contractor shall submit to the District for its approval all items deemed to be uninsurable. The risk of the damage to the Work due to the perils covered by the "Builder's Risk/All Risk" Insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and the Surety, and no Claims for such loss or damage shall be recognized by the District nor will such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

11.4 FIRE INSURANCE

Before the commencement of the Work, the Contractor shall procure, maintain, and cause to be maintained at the Contractor's expense, fire insurance on all Work subject to loss or damage by fire. The amount of fire insurance shall be sufficient to protect the Project against loss or damage in full until the Work is accepted by the District. This requirement may be waived upon confirmation by the District that such coverage is provided under the Builder's Risk Insurance being provided.

11.5 AUTOMOBILE LIABILITY

11.5.1 The District, Architect and Construction Manager, Inspectors, their directors, officers, employees, agents and volunteers shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Contractor or for which the Contractor is responsible. Such insurance coverage shall be primary and non-contributory insurance as respects the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Contractor's scheduled underlying coverage. Any insurance or self-insurance maintained by the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers shall be excess of the Contractor's insurance and shall not be called upon to contribute with it. The insurer shall agree to waive all rights of subrogation against the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers for losses paid under the terms of the insurance policy that arise from Work performed by the Contractor.

11.5.2 Insurance Services Office Business Auto Coverage Form Number CA 0001, Code 1 (any auto) is required. Comprehensive Automobile Liability insurance to include all autos, owned, non-owned, and hired, with limits of $1,000,000 per accident for bodily injury and property damage.

11.6 OTHER INSURANCE

The Contractor shall provide all other insurance required to be maintained under applicable laws, ordinances, rules, and regulations.

11.7 PROOF OF INSURANCE

The Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract until all required insurance and certificates have been obtained and delivered in duplicate to the District for approval subject to the following requirements:

a. Certificates and insurance policies shall include the following clause:

"This policy and any coverage shall not be suspended, voided, non-renewed, canceled, or reduced in required limits of liability or amounts of insurance or coverage until notice has been mailed via certified mail to the District. Date of cancellation or reduction may not be less than thirty (30) days after the date of mailing notice."

b. Certificates of insurance shall state in particular those insured, the extent of insurance, location and operation to which the insurance applies, the expiration date, and cancellation and reduction notices.

c. Certificates of insurance shall clearly state that the District and the Architect are named as additional insureds under the policy described and that such insurance policy shall be primary to any insurance or self-insurance maintained by District.

d. The Contractor and its Subcontractors shall produce a certified copy of any insurance policy required under this Section upon written request of the District.

11.8 COMPLIANCE

In the event of the failure of Contractor to furnish and maintain any insurance required by this Article 11, the Contractor shall be in default under the Contract. Compliance by Contractor with the requirement to carry insurance and furnish certificates or policies evidencing the same shall not relieve the Contractor from liability assumed under any provision of the Contract Documents, including, without limitation, the obligation to defend and indemnify the District and the Architect.

11.9 WAIVER OF SUBROGATION

Contractor waives (to the extent permitted by law) any right to recover against the District for damages to the Work, any part thereof, or any and all claims arising by reason of any of the foregoing, but only to the extent that such damages and/or claims are covered by property insurance and only to the extent of such coverage (which shall exclude deductible amounts) by insurance actually carried by the District.

The provisions of this Article are intended to restrict each party to recovery against insurance carriers only to the extent of such coverage and waive fully and for the benefit of each, any rights and/or claims which might give rise to a right of subrogation in any insurance carrier. The District and the Contractor shall each obtain in all policies of insurance carried by either of them, a waiver by the insurance companies thereunder of all rights of recovery by way of subrogation for any damages or claims covered by the insurance.

11.10 PERFORMANCE AND PAYMENT BONDS

11.10.1 Bond Requirements

Unless otherwise specified in the Supplemental Conditions, prior to commencing any portion of the Work, the Contractor shall furnish separate Payment and Performance Bonds for its portion of the Work which shall cover 100% faithful performance of and payment of all obligations arising under the Contract Documents and/or guaranteeing the payment in full of all claims for labor performed and materials supplied for the Work. All bonds shall be provided by a corporate Surety authorized and admitted to transact business in California as sureties.

To the extent, if any, that the Contract Price is increased in accordance with the Contract Documents, the Contractor shall, upon request of the District, cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the District. To the extent available, the bonds shall further provide that no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Price, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Contractor will release the Surety. If the Contractor fails to furnish the required bonds, the District may terminate the Contract for cause.

11.10.2 Surety Qualification

Only bonds executed by admitted Surety insurers as defined in Code of Civil Procedure § 995.120 shall be accepted. Surety must be a California-admitted Surety and listed by the U.S. Treasury with a bonding capacity in excess of the Project cost.

11.10.3 Alternate Surety Qualifications

If a California-admitted Surety insurer issuing bonds does not meet these requirements, the insurer will be considered qualified if it is in conformance with § 995.660 of the California Code of Civil Procedure and proof of such is provided to the District.

ARTICLE 12
UNCOVERING AND CORRECTION OF WORK

12.1 COMPLIANCE WITH TITLE 24 INSTALLATION REQUIREMENTS

Contractor is aware of the requirements governing Contractor's Work under title 24 Section 4-343 which provides, in pertinent part:

4-343. Duties of the Contractor.

(a) **Responsibilities**. It is the duty of the contractor to complete the Work covered by his or her contract in accordance with the approved Plans and Specifications therefore. The contractor in no way is relieved of any responsibility by the activities of the architect, engineer, Inspector or DSA in the performance of such duties.

(b) **Performance of the Work.** The contractor shall carefully study the approved Plans and Specifications and shall plan a schedule of operations well ahead of time. If at any time it is discovered that Work is being done which is not in accordance with the approved Plans and Specifications, the contractor shall correct the Work immediately. All inconsistencies or items which appear to be in error in the Plans and Specifications shall be promptly called to the attention of the architect or registered engineer, through the Inspector, for interpretation or correction. In no case, however, shall the instruction of the architect or registered engineer be construed to cause Work to be done which is not in conformity with the approved Plans, Specifications, and Change Orders. The contractor must notify the Project Inspector, in advance, of the commencement of construction of each and every aspect of the Work.

12.1.1 Issuance of Notices of Non-Compliance

The Inspector may issue a Notice of Non-Compliance on the Project indicating deviation from Plans and Specifications. It is Contractor's responsibility to correct all deviations from the approved Plans and Specifications unless the District has issued an Immediate Change Directive. In such case, the Contractor shall proceed with the Work with the understandings of the District as set forth in the ICD and as specifically noted in Article 7.3.

12.2 SPECIAL NOTICE OF AMERICAN'S WITH DISABILITIES ACT

Some of the requirements in the Plans and Specifications are meant to comply with the Americans with Disabilities Act ("ADA"). The requirements of the ADA are technical in nature and may appear to be minor in nature (i.e. whether a walkway or ramp has a 2% cross-slope). Contractor is warned that even the slightest deviation from the specific requirements from the ADA is considered a Civil Rights violation and subjects the District to fines of three times actual damages sustained by a handicap individual or up to $4,000 per violation and attorney's fees required to enforce the ADA violation. As a result of the significant liability and exposure associated with ADA aspects of the Contract, Contractor shall take special care to meet all ADA requirements detailed in the Plans and Specifications. Failure to comply with ADA rules that results in a Notice of Non-Compliance shall be repaired to meet ADA requirements promptly. In addition, any ADA violations that are not identified by Inspector or Architect that are later identified shall be repaired and charged back to the Contractor through a Deductive Change Order.

12.2.1 Indemnification of ADA Claims

Contractor shall indemnify, hold harmless and defend the District from ADA claims arising from the failure to comply with the Plans and Specifications. Further, any withholdings for ADA violations under Article 9.6 shall include potential redesign costs and an accelerated repair costs due to the potential for ADA claims arising from DSA posting of ADA violations on the Project.

12.3 UNCOVERING OF WORK

12.3.1 Uncovering Work for Required Inspections

Work shall not be covered without the Inspector's review and the Architect's knowledge that the Work conforms with the requirements of the approved Plans and Specifications (except in the case of an ICD under Article 7.3). Inspector must be timely notified of inspections and of new areas so Work can be inspected at least 48 hours before opening a new area (For example, see DSA Form 156 for Commencement/Completion of Work Notification which requires "at least 48 hour" advance notification of a new area). An Inspector must comply with DSA protocols for signing each category or phase of Work under DSA Form 152 (in compliance with the Form 152 Manual) or a Notice of Deviation (DSA Form 154) will be issued requiring the Work that was not inspected be uncovered for inspection. Thus, if a portion of the Work is covered without inspection or Architect approval, is subject to a Notice of Non-Compliance for being undertaken without inspection, or otherwise not in compliance with the Contract Documents, after issuance of a Written Notice of Non-Compliance (Form 154) or a written notice to uncover Work, Contractor shall promptly uncover all Work (which includes furnishing all necessary facilities, labor, and material) for the Inspector's or the Architect's observation and such Work shall be replaced at the Contractor's expense without change in the Contract Sum or Time.

12.3.2 Costs for Inspections Not Required

If a portion of the Work has been covered is believed to be Non-Conforming to the Plans and Specifications, even if the Form 152 for the category of Work has been signed by the Inspector, the Inspector or the Architect may request to see such Work, and it shall be promptly uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncover and replacement shall, by appropriate Change Order and shall, be charged to the District. If such Work is not in accordance with Contract Documents, the Contractor shall be responsible for all costs to uncover the Work, delays incurred to uncover the Work, and Contractor shall pay all costs to correct the Non-Conforming construction condition unless the condition was caused by the District or a separate contractor, in which event the District shall be responsible for payment of such costs to the Contractor.

12.4 CORRECTION OF WORK

12.4.1 Correction of Rejected Work

The Contractor shall promptly correct the Work rejected by the Inspector or the District upon recommendation of the Architect as failing to conform to the requirements of the Contract Documents, whether observed before or after Completion and whether or not Fabricated, installed, or completed. The Contractor shall bear costs of correcting the rejected Work, including cost for delays that may be incurred by Contractor or Subcontractors, the cost for additional testing, inspections, and compensation for the Inspector's or the Architect's services and expenses made necessary thereby (including costs for preparing a CCD, DSA CCD review fees, and additional inspection and special inspection costs).

12.4.2 One-Year Warranty Corrections

If, within one (1) year after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties established under Article 9.9.1, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the District to do so unless the District has previously given the Contractor a written acceptance of such condition. This period of one (1) year shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation under this Article 12.4.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition.

12.4.3 District's Rights if Contractor Fails to Correct

If the Contractor fails to correct nonconforming Work within a reasonable time, the District may correct the Work and seek a Deductive Change Order, pursuant to Article 9.6 or Article 2.2.

ARTICLE 13
MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

The District and the Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

In the absence of specific notice requirements in the Contract Documents, written notice shall be deemed to have been duly served if delivered in person to the individual, member of the firm or entity, or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and Obligations Cumulative

Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

13.4.2 No Waiver

No action or failure to act by the Inspector, the District, or the Architect shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Compliance

Tests, inspections, and approvals of portions of the Work required by the Contract Documents will comply with Division 1, Title 24, and with all other laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction.

13.5.2 Independent Testing Laboratory

The District will select and pay an independent testing laboratory to conduct all tests and inspections. Selection of the materials required to be tested shall be made by the laboratory or the District's representative and not by the Contractor. See Articles 3.13.1 and 4.3.6 regarding costs or expenses of inspection or testing outside of the Project Site.

13.5.3 Advance Notice to Inspector

The Contractor shall notify the Inspector a sufficient time in advance of its readiness for required observation or inspection so that the Inspector may arrange for same. The Contractor shall notify the Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents which must, by terms of the Contract Documents, be tested in order that the Inspector may arrange for the testing of the material at the source of supply.

13.5.4 Testing Off-Site

Any material shipped by the Contractor from the source of supply, prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Work.

13.5.5 Additional Testing or Inspection

If the Inspector, the Architect, the District, or public authority having jurisdiction determines that portions of the Work require additional testing, inspection, or approval not included under Article 13.5.1, the Inspector will, upon written authorization from the District, make arrangements for such additional testing, inspection, or approval. The District shall bear such costs except as provided in Articles 13.5.6 and 13.5.7.

13.5.6 Costs for Retesting

If such procedures for testing, inspection, or approval under Articles 13.5.1 and 13.5.2reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs arising from such failure, including those of re-testing, re-inspection, or re-approval, including, but not limited to, compensation for the Architect's services and expenses. Any such costs shall be paid by the District, invoiced to the Contractor, and deducted from the next Progress Payment.

13.5.7 Costs for Premature Test

In the event the Contractor requests any test or inspection for the Project and is not completely ready for the inspection, the Contractor shall be invoiced by the District for all costs and expenses resulting from that testing or inspection, including, but not limited to, the Inspector's and Architect's fees and expenses, and the amount of the invoice shall be deducted from the next Progress Payment.

13.6 TRENCH EXCAVATION

13.6.1 Trenches Greater Than Five Feet

Pursuant to Labor Code section 6705, if the Contract Price exceeds $25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, submit to the District or a registered civil or structural engineer employed by the District or Architect, a detailed plan showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

13.6.2 Excavation Safety

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the District or by the person to whom authority to accept has been delegated by the District.

13.6.3 No Tort Liability of District

Pursuant to Labor Code § 6705, nothing in this Article shall impose tort liability upon the District or any of its employees.

13.6.4 No Excavation without Permits

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

13.7 WAGE RATES, TRAVEL, AND SUBSISTENCE

13.7.1 Wage Rates

Pursuant to the provisions of Article 2 (commencing at § 1720), Chapter 1, Part 7, Division 2, of the Labor Code, the District has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public works project is to be performed for each craft, classification, or type of worker needed for this Project from the Director of the Department of Industrial Relations ("Director"). These rates are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

Any worker employed to perform Work on the Project, but such Work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

13.7.2 Holiday and Overtime Pay

Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations

or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

13.7.3 Wage Rates Not Affected by Subcontracts

The Contractor shall pay and shall cause to be paid each worker engaged in the execution of the Work on the Project not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such workers.

13.7.4 Per Diem Wages

The Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project per diem wages including, but not limited to, employer payments for health and welfare, pensions, vacation, travel time and subsistence pay as provided for in Labor Code §1773.1.

13.7.5 Forfeiture and Payments

Pursuant to Labor Code §1775, the Contractor shall forfeit to the District, not more than Two Hundred Dollars ($200.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing wages rates as determined by the Director of the Department of Industrial Relations, for the work or craft in which the worker is employed for any Work done under the Agreement by the Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on consideration of: (1) whether the Contractor or Subcontractor's failure to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily correct upon being brought to the attention of the Contractor or Subcontractor; and (2) whether the Contractor or Subcontractor has a prior record of failing to meet its prevailing wage obligations.

13.7.6 Monitoring and Enforcement by Labor Commissioner

Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE). The Contractor and all subcontractors shall be required to furnish, at least monthly, certified payroll records directly to the Labor Commissioner in accordance with Labor Code section 1771.4. All payroll records shall be furnished in a format required by the Labor Commissioner. The Contractor and all subcontractors must sign up for, and utilize, the Labor Commissioner's electronic certified payroll records submission system. The District will have direct and immediate access to all CPRs for the Project that are submitted through the Labor Commissioner's system. The District can use this information for any appropriate purpose, including monitoring compliance, identifying suspected violations, and responding to Public Records Act requests.

The Labor Commissioner/ DLSE may conduct various compliance monitoring and enforcement activities including, but not limited to, confirming the accuracy of payroll records, conducting worker interviews, conducting audits, requiring submission of itemized statements prepared in accordance with Labor Code section 226, and conducting random in-person inspections of the Project site ("On-Site Visits"). On-Site Visits may include inspections of records, inspections of the Work site and observation of work activities, interviews of workers and others involved with the Project, and any other activities deemed necessary by the Labor Commissioner/DLSE to ensure compliance with prevailing wage requirements. The Labor Commissioner/DLSE shall have free access to any construction site or other place

of labor and may obtain any information or statistics pertaining to the lawful duties of the Labor Commissioner/DLSE.

Any lawful activities conducted or any requests made by the Labor Commissioner/DLSE shall not be the basis for any delays, claims, costs, damages or liability of any kind against the District by the Contractor. Contractor and all subcontractors shall cooperate and comply with any lawful requests by the Labor Commissioner/ DLSE. The failure of the Labor Commissioner, DLSE, or any other entity related to the Department of Industrial Relations to comply with any requirement imposed by the California Code of Regulations, Title 8, Chapter 8 shall not of itself constitute a defense to the failure to pay prevailing wages or to comply with any other obligation imposed by Division 2, Part 7, Chapter 1 of the Labor Code.

Prior to commencing any Work on the Project, the Contractor shall post the required notice/poster required under the California Code of Regulations and Labor Code section 1771.4 in both English and Spanish at a conspicuous, weatherproof area at the Project site. The required notice/poster is available on the Labor Commissioner's website.

13.8 RECORDS OF WAGES PAID

13.8.1 Payroll Records

a. Pursuant to §1776 of the Labor Code, the Contractor and each Subcontractor shall keep an accurate payroll record showing the name, address, social security number, work classification and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by him or her in connection with the Project.

All payroll records as specified in Labor Code §1776 of the Contractor and all Subcontractors shall be certified and furnished directly to the Labor Commissioner in accordance with Labor Code §1771.4(a)(3) on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Payroll records as specified in Labor Code §1776 shall be certified and submitted to the District with each application for payment. All payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

1. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

2. A certified copy of all payroll records shall be made available for inspection or furnished upon request to a representative of District, the Division of Labor Standards Enforcement or the Division of Apprenticeship Standards of the Department of Industrial Relations.

3. A certified copy of all payroll records shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided

pursuant to Paragraph (2) above, the requesting party shall, prior to being provided the records, reimburse the costs, according to law for the preparation by the Contractor, Subcontractor(s), and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor.

b. The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division of Labor Standards Enforcement.

c. The Contractor or Subcontractor(s) shall file a certified copy of all payroll records with the entity that requested such records within 10 calendar days after receipt of a written request.

d. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or the Subcontractor(s) performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual's name and social security number. Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided non-redacted copies of certified payroll records.

e. The Contractor shall inform the District of the location of all payroll records, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

f. The Contractor or Subcontractor(s) shall have 10 calendar days in which to comply subsequent to receipt of a written notice requesting payroll records. In the event that the Contractor or Subcontractor(s) fails to comply within the 10-day period, the Contractor or Subcontractor(s) shall, as a penalty to the District, forfeit One Hundred Dollars ($100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

Responsibility for compliance with this Article shall rest upon the Contractor.

13.8.2 Withholding of Contract Payments & Penalties

The District may withhold or delay contract payments to the Contractor and/or any Subcontractor if:

a. The required prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations is not paid to all workers employed on the Project; or

b. The Contractor or Subcontractor(s) fail to submit all required certified payroll records with each application for payment, but not less than once per month; or

c. The Contractor or Subcontractor(s) submit incomplete or inadequate payroll records; or

d. The Contractor or Subcontractor(s) fail to comply with the Labor Code requirements concerning apprentices; or

e. The Contractor or Subcontractor(s) fail to comply with any applicable state laws governing workers on public works projects.

13.9 APPRENTICES

13.9.1 Apprentice Wages and Definitions

All apprentices employed by the Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade for which he or she is employed, and as determined by the Director of the Department of Industrial Relations, and shall be employed only at the craft or trade to which he or she is registered. Only apprentices, as defined in §3077 of the Labor Code, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprenticeship agreements under Chapter 4 (commencing with §3070) of Division 3, are eligible to be employed under this Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training, or in accordance with the rules and regulations of the California Apprenticeship Council.

13.9.2 Employment of Apprentices

Contractor agrees to comply with the requirements of Labor Code §1777.5. The Contractor awarded the Project, or any Subcontractor under him or her, when performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall employ apprentices in the ratio set forth in Labor Code §1777.5. The Contractor or any Subcontractor must apply to any apprenticeship program in the craft or trade that can provide apprentices to the Project site for a certificate approving the contractor or subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor upon the Contractor's or Subcontractor's request. "Apprenticeable craft or trade" as used in this Article means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council. The ratio of work performed by apprentices to

journeyman employed in a particular craft or trade on the Project shall be in accordance with Labor Code §1777.5.

13.9.3 Submission of Contract Information

Prior to commencing Work on the Project, the Contractor and Subcontractors shall submit contract award information to the applicable apprenticeship program(s) that can supply apprentices to the Project and make the request for the dispatch of apprentices in accordance with the Labor Code. The information submitted shall include an estimate of journeyman hours to be performed under the Contact, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the District if requested. Within 60 days after concluding Work on the Project, the Contractor and Subcontractors shall submit to the District, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the Project.

13.9.4 Apprentice Fund

The Contractor or any Subcontractor under him or her, who, in performing any of the Work under the Contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the Director determines is the prevailing amount of apprenticeship training contributions in the area of the Project. The Contractor and Subcontractors may take as a credit for payments to the California Apprenticeship Council any amounts paid by the Contractor or Subcontractor to an approved apprenticeship program that can supply apprentices to the Project. The Contractor and Subcontractors may add the amount of the contributions in computing his or her bid for the Contract.

13.9.5 Prime Contractor Compliance

The responsibility of compliance with Article 13 and §1777.5 of the Labor Code for all apprenticeable occupations is with the Prime Contractor. Any Contractor or Subcontractor that knowingly violates the provisions of this Article or Labor Code §1777.5 shall be subject to the penalties set forth in Labor Code §1777.7.

13.10 ASSIGNMENT OF ANTITRUST CLAIMS

13.10.1 Application

Pursuant to Government Code § 4551, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or Subcontractor offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 [commencing with § 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders Retention Payment to the Contractor, without further acknowledgment by the parties. If the District receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Chapter 11 (commencing with § 4550) of Division 5 of Title 1 of the Government Code, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the District any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but

were not paid by the District as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

13.10.2 Assignment of Claim

Upon demand in writing by the assignor, the District shall, within one (1) year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the District has not been injured thereby or the District declines to file a court action for the cause of action.

13.11 STATE AND DISTRICT CONDUCTED AUDITS

Pursuant to and in accordance with the provisions of Government Code § 10532, or any amendments thereto, all books, records, and files of the District, the Contractor, or any Subcontractor connected with the performance of this Contract involving the expenditure of state funds in excess of Ten Thousand Dollars ($10,000.00), including, but not limited to, the administration thereof, shall be subject to the examination and audit of the Office of the Auditor General of the State of California for a period of five (5) years after Retention Payment is made or a Notice of Completion is Recorded, whichever occurs first. Contractor shall preserve and cause to be preserved such books, records, hard drives, electronic media, and files for the audit period.

Pursuant to the remedies under Public Contract Code section 9201 and Government Code section 930.2, Contractor, through execution of this Agreement, also agrees the District shall have the right to review and audit, upon reasonable notice, the books and records of the Contractor concerning any monies associated with the Project. The purpose of this "Audit" is to quickly and efficiently resolve Disputes or Claims based on the actual costs incurred and to reduce the uncertainty in resolving Disputes or Claims with limited information. The District shall perform any audits at its own cost and any such audit shall be performed by an independent auditor, having no direct or indirect relationship with the functions or activities being audited or with the business conducted by the Contractor or District. In the event the independent auditor determines that Change Orders, response to Request for Proposals, Disputes, Claims, or other requests for payment are in error, or have has any other concerns or questions, the Auditor shall report the results of the Audit findings to the District and provide a copy to the Contractor after giving the District Board the opportunity for at least 10 days review. If the Contractor disputes the findings of the independent auditor, such dispute shall be handled in the manner set forth under Article 4.6.2.

If Contractor having agreed to the terms of this Contract fails to produce books or records requested by Auditor, such failure to produce books or records that were required to be preserved for audit, it shall be presumed that the information contained in the withheld books or records were unfavorable to the Contractor and the Auditor shall note this refusal in the results of the Audit findings for further evaluation by the District and the District's Board. The refusal to release records that are concerning monies associated with the Project may be used as a grounds to debar the Contractor under Article 15 for failure to preserve records under Article 13.11 and the failure to produce required audit records may also be used as a grounds for a negative finding against the Contractor depending on the significance of the records that are withheld by Contractor. Failure to produce job cost data tied to job cost categories and budgets shall be presumed an intentional failure to produce key audit records. Similarly, failure to produce Daily Reports (prepared at or near the time of the Work actually took place (See Article 3.16) shall be presumed an intentional failure to produce key audited records.

If Contractor is seeking costs for inefficiency, home office overhead, or unanticipated increased costs due to delays or acceleration, Contractor shall also produce copies of the original bid tabulation utilized in submitting Contractor's bid for the Project. This document shall be considered confidential and shall not be subject to disclosure through a Public Records Act and shall not be distributed to anyone other than the District and the District's counsel. This bid tabulation shall only be used in litigation, arbitration, evaluation of Claims or Disputes, Audit, and trial. If the records for the bid tabulation are kept on a computer, the Contractor shall also produce all metadata (in native format) that accompanies the bid tabulation for inspection to prove the authenticity of the underlying bid tabulation. Failure to produce the bid tabulation for review of inefficiency, home office overhead, or unanticipated increased costs due to delays or accelerations shall be considered material evidence that the bid tabulation was not favorable to the Contractor. This evidence shall be entered as a jury instruction for trial that the bid tabulation was not produced and the bid tabulation information was unfavorable to the Contractor. The evidence may also be used in debarment proceedings, and noted as an exception to an Audit findings.

Upon notification of Contractor concerning the results of the audit and a reasonable time has passed for Contractor to respond to the Audit findings and if either there is no Dispute of the Audit findings under Article 4.6 or if the result after utilizing the Disputes Clause confirms the Audit findings, the District may seek reimbursement for overstated Disputes, Claims, or Change Orders and may also undertake debarment proceedings under Article 15 of these General Conditions.

13.12 STORM WATER POLLUTION PREVENTION

13.12.1 Application

This Section addresses the preparation, implementation and monitoring of a Storm Water Pollution Prevention Plan (SWPPP) for the purpose of preventing the discharge of pollutants from the construction site. This includes the elimination of pollution discharges such as improper dumping, spills or leakage from storage tanks or transfer areas. The District will not issue a Notice to Proceed until Contractor has prepared by a qualified individual and obtained approval of the Permit Registration Documents ("PRDs") that include a Notice of Intent, Construction Risk Calculation, Site Map, SWPPP, Annual Fee and any additional required documents from all applicable Local Governing Agencies including the Regional Water Quality Control Board. The Contractor shall also secure a certification that the Project has met all of the conditions of the General Construction Activity Storm Water Permit (GCASP) and comply with all applicable local, state and federal regulations governing storm water pollution prevention.

13.12.2 References and Materials

- California Stormwater Quality Association New Development and Redevelopment Best Management Practice Handbook

- 2009 California Stormwater Quality Association Construction BMP Handbook .

- State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbing Activities. Available on-line at:

- http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.- Use materials of a class, grade and type needed to meet the performance described in the BMP Handbook.

13.12.3 Preparation and Approval

The Contractor shall prepare by a qualified individual the PRDs that include a Notice of Intent, Construction Risk Calculation, Site Map, SWPPP, Annual Fee and any additional required documents. The Contractor's Qualified SWPPP Developer ("QSD") shall prepare the Storm Water Pollution Prevention Plan (SWPPP) as required to comply with storm water pollution regulations for project sites with storm water discharges associated with construction activity such as clearing or demolition, grading, excavation and other land disturbances. The SWPPP shall apply to all areas that are directly related to construction activity, including but not limited to staging areas, storage yards, material borrow areas, and access roads.

13.12.3.1 The Contractor shall prepare and submit to the Local Governing Agencies and the District the SWPPP for review and approval if the project sites, new or existing, with land disturbance of 1 or more acres (or less than 1 acres if part of a common plan of development); the construction activity that results in land surface disturbances of less than one acre is part of a larger common plan of development or sale of one or more acres of disturbed land surface; or the construction activity associated with Linear Underground/Overhead Projects ("LUPs") including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

13.12.3.2 The Contractor shall also pay annual renewal fee(s) until the contract is completed and make all such checks payable to the State Water Resources Control Board. The Notice of Intent must be submitted at least two weeks prior to the commencement of construction activities.

13.12.3.3 The Contractor shall prepare the SWPPP by following the format in Sections 2, 3, 4 and Appendices A through F of the California Stormwater BMP Handbook - Construction, January 2009 edition, published by the California Stormwater Quality Association. The publication is available from:

California Stormwater
Quality Association
P.O. Box 2105
Menlo Park, CA 94026-2105
Phone: (650) 366-1042
E-mail: info@casqa.org

or

https://www.casqa.org/store/products/tabid/154/p-167-construction-handbookportal-initial-subscription.aspx

13.12.3.4 Where land disturbance is less than 1 acre, any BMPs indicated in the BMP Handbook needed to prevent or minimize storm water pollution shall be implemented at no extra cost to the District.

13.12.3.5 Within two weeks after Award of Contract by the District, the Contractor shall submit to the District's Civil Engineer one copy of the PRDs including the SWPPP for review. After the District's approval, the Contractor shall provide approved copies of the SWPPP as follows: one copy each to the Project Inspector, Construction Manager, Architect, Commissioned Architect and District's Civil Engineer.

13.12.4 Implementation

The Contractor shall implement the Storm Water Pollution Prevention Plan by doing the following:

a. Obtain a Waste Discharger Identification (WDID) number from the SWRCB before beginning construction. This number will be issued once your PRDs are administratively accepted and fee is received.

b. Keep the SWPPP, REAPs, monitoring data on the construction site.

c. Employ a Qualified SWPPP Practitioner (QSP) to implement the SWPPP during construction and develop Rain Event Action Plans ("REAPs").

d. Install, inspect, maintain and monitor BMPs required by the General Permit.

e. Install perimeter controls prior to starting other construction work at the site.

f. Contain on-site storm water at the jobsite. Do not drain on-site water directly into the storm drain.

g. Implement the SWPPP.

h. Provide SWPPP and BMP implementation training for those responsible for implementing the SWPPP.

i. Designate trained personnel for the proper implementation of the SWPPP.

j. Conduct monitoring, as required, and assess compliance with the Numeric Action Levels (NALs) or Numeric Effluent Limitations (NELs) appropriate to your project.

k. Report monitoring data:

1. Maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is last. These records must be available at the construction site until construction is completed.

2. Have a QSD revise the SWPPP as needed to reflect the phases of construction and to suit changing site conditions and instances when properly installed systems are ineffective.

3. Assist the District with entering any necessary data or information into the Stormwater Multi-Application and Reporting System ("SMARTS") system.

l. At the end of Construction Contract:

1. Submit Notice of Termination (NOT) into the SMARTS when construction is complete and conditions of termination listed in the NOT have been satisfied. A copy of the NOT can be found at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

2. Leave in place storm water pollution prevention controls needed for post-construction storm water management and remove those that are not needed as determined by the District. Thereafter, left-in-place controls will be maintained by the District.

3. Provide Site Monitoring Reports, SWPPP revisions, Compliance Certifications and related documents to the District. Post-construction storm water operation and management plan as mentioned in the compliance certifications are considered to be in place at the end of the Construction Contract.

13.12.5 Monitoring

The Contractor shall conduct examination of storm water pollution prevention controls as required by the State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbing Activities. This includes properly qualified personnel performing all required monitoring, testing, inspections and monitoring. The Contractor shall also conduct examination of storm water pollution prevention controls, as well as before and after each storm event in compliance with the State Water Resources Control Board Order No. 2009-0009-DWQ, National Pollutant Discharge Elimination System General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (General Permit) (SWRCB, 2009).and at least once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or BMP changes as soon as feasible. All maintenance related to a storm event should be completed within 48 hours of the storm event. The Contactor shall also prepare and maintain, at the jobsite, a log of each inspection using Site Monitoring Report forms.

13.12.6 Liabilities and Penalties

a. Review of the SWPPP and inspection logs by the District shall not relieve the Contractor from liabilities arising from non-compliance with storm water pollution regulations.

b. Payment of penalties for non-compliance by the Contractor shall be the sole responsibility of the Contractor and will not be reimbursed by the District.

c. Compliance with the Clean Water Act pertaining to construction activity is the sole responsibility of the Contractor. For any fine(s) levied against the District due to non-compliance by the Contractor, the District will deduct from the final payment due the Contractor the total amount of the fine(s) levied on the District, plus legal and associated costs.

d. The Contractor shall submit to the District a completed NOI for change of information (Construction Site Information and Material Handling/Management Practices).

ARTICLE 14
TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE

14.1.1 Grounds for Termination

The Contractor may terminate the Contract if the Work is stopped for a period of thirty (30) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons performing portions of the Work for whom the Contractor is contractually responsible, for only the following reasons:

a. Issuance of an order of a court or other public authority having jurisdiction; or

b. An act of the United State or California government, such as a declaration of national emergency.

14.1.2 Notice of Termination

If one of the above reasons exists, the Contractor may, upon written notice of seven (7) additional days to the District, terminate the Contract and recover from the District payment for Work executed and for reasonable costs verified by the Architect with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages.

14.2 TERMINATION BY THE DISTRICT FOR CAUSE

14.2.1 Grounds for Termination

The District may terminate the Contractor and/or this Contract for the following reasons:

a. Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

b. Persistently or repeatedly is absent, without excuse, from the job site;

c. Fails to make payment to Subcontractors, suppliers, materialmen, etc.;

d. Persistently disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction;

e. Fails to provide a schedule or fails or refuses to update schedules required under the Contract;

f. Falls behind on the Project and refuses or fails to undertake a Recovery Schedule;

g. If the Contractor has been debarred from performing Work

h. Becomes bankrupt or insolvent, including the filing of a general assignment for the benefit of creditors; or

i. Otherwise is in substantial breach of a provision of the Contract Documents.

14.2.2 Notification of Termination

When any of the above reasons exist, the District may, without prejudice to any other rights or remedies of the District and after giving the Contractor and the Contractor's Surety written notice of seven (7) days, terminate the Contractor and/or this Contract and may, subject to any prior rights of the Surety:

a. Take possession of the Project and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

b. Accept assignment of Subcontracts. Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept;

c. Complete the Work by any reasonable method the District may deem expedient, including contracting with a replacement contractor or contractors; and,

d. Agree to accept a takeover and completion arrangement with Surety that is acceptable to the District Board.

14.2.3 Takeover and Completion of Work after Termination for Cause

A Termination for Cause is an urgent matter which requires immediate remediation since Project Work is open and incomplete, the site is subject to vandalism and theft, the Project site is considered a public nuisance, and there is a possibility of injury and deterioration of the Project Work and materials. Thus, the District shall be entitled to enter a takeover contract to either remediate the unfinished condition or complete the Work for this Project.

14.2.4 Payments Withheld

If the District terminates the Contract for one of the reasons stated in Article 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is complete. All costs associated with the termination and completion of the Project shall be the responsibility of the Contractor and/or its Surety.

14.2.5 Payments upon Completion

If the unpaid balance of the Contract Sum exceeds costs of completing the Work, including compensation for professional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and its Surety shall pay the difference to the District. The amount to be paid to the Contractor, or District, as the case may be, shall be certified by the Architect upon application. This payment obligation shall survive completion of the Contract.

14.3 TERMINATION OF CONTRACT BY DISTRICT (CONTRACTOR NOT AT FAULT)

14.3.1 Termination for Convenience

District may terminate the Contract upon fifteen (15) calendar days of written notice to the Contractor and use any reasonable method the District deems expedient to complete the Project, including contracting with replacement contractor or contractors, if it is found that reasons beyond the control of either the District or Contractor make it impossible or against the District's interest to complete the Project. In such a case, the Contractor shall have no Claims against the District except for: (1) the actual cost for approved labor, materials, and services performed in accordance with the Contract Documents which have not otherwise been previously paid for and which are supported and documented through timesheets, invoices, receipts, or otherwise; and (2) profit and overhead of ten percent (10%) of the approved costs in item (1); and (3) termination cost of five percent (5%) of the approved costs in item (1). Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept.

14.3.2 Non-Appropriation of Funds/ Insufficient Funds

In the event that sufficient funds are not appropriated to complete the Project or the District determines that sufficient funds are not available to complete the Project, District may terminate or suspend the completion of the Project at any time by giving written notice to the Contractor. In the event that the District exercises this option, the District shall pay for any and all work and materials completed or delivered onto the site for which value is received, and the value of any and all work then in progress and orders actually placed which cannot be canceled up to the date of notice of termination. The value of work and materials not otherwise already paid for by the District up to the time of termination under this Paragraph shall include a factor of fifteen percent (15%) for the Contractor's overhead and profit and there shall be no other costs or expenses paid to Contractor. All work, materials and orders paid for pursuant to this provision shall become the property of the District. District may, without cause, order Contractor in writing to suspend, delay or interrupt the Project in whole or in part for such period of time as District may determine. Adjustment shall be made for increases in the cost of performance of the Agreement caused by suspense, delay or interruption.

14.4 REMEDIES OTHER THAN TERMINATION

If a default occurs, the District may, without prejudice to any other right or remedy, including, without limitation, its right to terminate the Contract pursuant to Article 14.2, do any of the following:

a. Permit the Contractor to continue under this Contract, but make good such deficiencies or complete the Contract by whatever method the District may deem expedient, and the cost and expense thereof shall be deducted from the Contract Price or paid by the Contractor to the District on demand;

b. If the workmanship performed by the Contractor is faulty or defective materials are provided, erected or installed, then the District may order the Contractor to remove the faulty workmanship or defective materials and to replace the same with work or materials that conform to the Contract Documents, in which event the Contractor, at its sole costs and expense, shall proceed in accordance with the District's order and complete the same within the time period given by the District in its notice to the Contractor; or

c. Initiate procedures to declare the Contractor a non-responsible bidder for a period of two (2) to five (5) years thereafter.

All amounts expended by the District in connection with the exercise of its rights hereunder shall accrue interest from the date expended until paid to the District at the maximum legal rate. The District may retain or withhold any such amounts from the Contract Price. If the Contractor is ordered to replace any faulty workmanship or defective materials pursuant to Paragraph (b) above, the Contractor shall replace the same with new work or materials approved by the Architect and the District, and, at its own cost, shall repair or replace, in a manner and to the extent the Architect and the District shall direct, all Work or material that is damaged, injured or destroyed by the removal of said faulty workmanship or defective material, or by the replacement of the same with acceptable work or materials. In no event shall anything in this Article be deemed to constitute a waiver by the District of any other rights or remedies that it may have at law or in equity, it being acknowledged and agreed by the Contractor that the remedies set forth in this Article are in addition to, and not in lieu of, any other rights or remedies that the District may have at law or in equity.

ARTICLE 15
DEBARMENT

15.1 DEBARMENT MEANS THERE HAS BEEN A FINDING THAT THE CONTRACTOR IS NOT RESPONSIBLE.

During the course of the Project, or if it is determined through Change Orders, Claims, or Audit that a Contractor is not responsible, the District may, in addition to other remedies provided in the Contract, debar the Contractor from bidding or proposing on, or being awarded, and/or performing work on District contracts for a specified period of time, which generally will not exceed five (5) years, but may exceed five (5) years or be permanent if the circumstances warrant such debarment. In addition to the debarment proceeding, a finding that a Contractor is to be debarred shall result in the termination of any or all existing Contracts the Contractor may have with the District.

15.2 BOARD FINDING

The District may debar a Contractor if the Board, or the Board's delegatee, in its discretion, finds the Contractor has done any of the following:

15.2.1 Intentionally or with reckless disregard, violated any term of the Contract with the District

15.2.2 Committed an acts or omission which reflects on the Contractor's quality, fitness or capacity to perform Work for the District;

15.2.3 Committed an act or offense which indicates a lack of business integrity or business honesty; or,

15.2.4 Made or submitted a false claim against the District or any other public entity.

15.3 HEARING AND PRESENTATION OF EVIDENCE

If there is evidence that the Contractor may be subject to debarment, the District shall notify the Contractor in writing of the evidence which is the basis for the proposed debarment and shall advice the Contractor of the scheduled date for a debarment hearing before the District Board or its delegated designee.

The District Board, or designee, shall conduct a hearing where evidence on the proposed debarment is presented. The Contractor or the Contractor's representative shall be given an opportunity to submit evidence at the hearing. The Contractor shall be provided an adequate amount of time to prepare and object to evidence presented. A tentative proposed decision shall be issued as a tentative decision and the District shall be entitled to modify, deny or adopt the proposed decision. The proposed decision shall contain a recommendation regarding whether the Contractor should be debarred, and, if so, the appropriate length of time of the debarment. The Contractor and the District shall be provided an opportunity to object to the tentative proposed decision for a period of 15 days. If additional evidence is presented, the District shall evaluate this evidence and either issue an amended ruling, issue the same ruling, or call a further hearing.

If a Contractor has been debarred for a period of longer than five (5) years, that Contractor may after the debarment has been in effect for at least five (5) years, submit a written request for review of the

debarment determination to reduce the period of debarment or terminate the debarment. The District may, in its discretion, reduce the period of debarment or terminate the debarment if it finds that the Contractor has adequately demonstrated one or more of the following: (1) elimination of the grounds for which the debarment was imposed; (2) a bona fide change in ownership or management; (3) material evidence discovered after debarment was imposed; or (4) any other reason that is in the best interests of the District.

The District will consider a request for review of a debarment determination only where: (1) the Contractor has been debarred for a period longer than five (5) years; (2) the debarment has been in effect for at least five (5) years; and (3) the request is in writing, states one or more of the grounds for reduction of the debarment period or termination of the debarment, and includes supporting documentation. Upon receiving an appropriate request, the District will provide notice of the hearing on the request. At the hearing, the District shall review evidence on the proposed reduction of debarment period. This hearing shall be conducted and the request for review decided by the District pursuant to the same procedures as for a debarment hearing.

The District's proposed decision shall contain a recommendation on the request to reduce the period of debarment or terminate the debarment.

The terms shall also apply to Subcontractors of Contractor.

SUPPLEMENTARY GENERAL CONDITIONS

The following supplements modify the General Conditions. Where a portion of the General Conditions is modified and or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

ARTICLE 3 – THE CONTRACTOR

Article 3.10.4 Add the following: The Contractor shall require all Subcontractors to prepare and submit to the Contractor, within *fifteen (15)* days of execution of the Subcontract, comprehensive lists, in quadruplicate, of the manufacturers and products proposed for the Project, including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for the Contractor's or Architect's approval.

ARTICLE 8 – TIME

Article 8 Schedule Inclusion Requirements –The Baseline Schedule shall include the following Milestone Schedule: See special Conditions for the project milestone schedule.

Article 8.2.2 Performance During Working Hours – delete this Article and replace with the following:

8.2.2 Where a single shift is worked, eight (8) consecutive hours between 7:00 AM and 6:00 PM shall constitute a work day at the applicable prevailing wage rate(s).

Article 8.2.2 Performance During Working Hours – delete this Article and replace with the following:

8.2.2 Forty (40) hours between Monday 7:00 AM and Friday 6:00 PM shall constitute a work week at the applicable prevailing wage rate(s);

Article 8.4.1 Liquidated Damages – Contractor will be liable to the District for Liquidated Damages pursuant to Article 8.4 for each calendar day of delay in the amount set forth in the Agreement Form.

One Thousand ($1,000) dollars per calendar day.

ARTICLE 11 – INSURANCE AND BONDS

Article 11.10Performance and Payment Bonds – The number of executed copies of the Performance Bond and the Payment Bond required is three (3).

IMMEDIATE CONSTRUCTION CHANGE DIRECTIVE NO.

PROJECT: _____

TO: _____

You are hereby directed to provide the extra work necessary to comply with this ICD.

DESCRIPTION OF CHANGE: _____

_____

COST (This cost shall not be exceeded): _____

TIME FOR COMPLETION: _____

NOTE:

Pursuant to Article 7.3.1.2 An Immediate Change Directive is a written order to the Contractor prepared by the Architect and signed by the District (and CM if there is a CM on the Project) and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The District may by ICD, without invalidating the Contract, direct immediate changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions within. If applicable, the Contract Sum and Contract Time will be adjusted accordingly. CONTRACTOR SHALL PROCEED WITH WORK SET FORTH IN THIS ICD IMMEDIATELY UPON RECEIPT OR THE DISTRICT MAY EITHER HOLD THE CONTRACTOR IN EITHER PARTIAL DEFAULT PURSUANT TO ARTICLE 2.2 OR TOTAL DEFAULT PURSUANT TO ARTICLE 14.

_____
Architect

_____
District

SUPPLEMENTARY GENERAL CONDITIONS

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: _____

TO: _____

As the Architect for the Project described above, the Project has reached Substantial Completion. Substantial Completion is not reached unless and until each of the following three (3) conditions have been met: (1) all contractually required items have been installed with the exception of only minor and Incomplete Punch Items (See Article 9.9 of the General Conditions); (2) All Fire/Life Safety Systems have been installed, and are working and signed off on the DSA Form 152 Inspection Card, all building systems including mechanical, electrical and plumbing are all functioning; and (3) the Project is fit for occupancy and its intended use

I certify that the Project has reached Substantial Completion as defined above on the following date: _____.

_____

Architect

SPECIAL CONDITIONS

Application of Special Conditions. These Special Conditions form a part of the Contract for the Work generally described as: **14-2022 BUENA PARK SCHOOL DISTRICT – MPR MODERNIZATION PROJECTS.** These Special Conditions supplement and/or modify certain provisions of the General Conditions. Where any Article or portion in the General Conditions is amended or superseded, the balance of that Article not specifically amended or superseded shall remain in effect as originally written.

1. **Scope of work** to include, but is not limited to: work described on scope of work Exhibit A: The Modernization of the MPRs at Emery, Corey, Whitaker, and Gilbert Elementary Schools; including, ADA compliance improvements, and new finishes, in the District described above, all in strict conformance with the drawings and other Contract Documents on file at the Purchasing Office of said District for amounts set forth herein.

2. **License Classification:** Each bidder shall be a licensed contractor pursuant to the California Business and Professions Code, and be licensed to perform the work called for in the Contract Documents. The successful bidder must possess a valid and active Class B-I License at the time of bid and throughout the duration of this Contract. The Contractor's California State License number shall be clearly stated on the bidder's proposal.

3. **Submittals/Deliverables:** Contractor must submit submittals or other documents required under the Contract Documents including, but not limited to, schedule of values, payment applications, shop drawings, submittals, samples, as-built documents, close-out documents, DSA forms, warranties, manuals, RFI's, daily reports, meeting minutes, etc. Such documents shall be provided the Contractor to allow the District to obtain state funding or other funding for each school site, as well as DSA close-out and certification. The District, in its sole discretion, may waive this requirement for specific documents or submittal in writing. The Contractor is only required to provide schedules as required by the Contract Documents that includes all work for the entire Project.

4. **Allowances:** The following allowances are in addition to the scope of the Work as defined in the Contract. The Contractor's total bid amount (refer to Bid Form), includes all Allowances noted below. Allowances are for the use of the District only.

List of Allowances

Item	Description	Amount ($)
1	District Allowance – Emery Elementary School MPR	$40,000.00
2	District Allowance – Whitaker Elementary School MPR	$35,000.00
3	District Allowance – Corey Elementary School MPR	$35,000.00
4	District Allowance – Gilbert Elementary School MPR	$35,000.00
	Total Allowances:	$145,000.00

The District may utilize, in its sole discretion, the above Allowances up to the total amount during the course of construction by issuing a Work Order(s) to the CONTRACTOR. Upon incorporation of the Work described in each Work Order, the CONTRACTOR will be paid out of the Allowance fund as a line item included in the Contractor's payment application.

Allowance cost amounts noted above include all costs of coordination, supervision, bond costs, overhead and profit, supervision, installation and all indirect Project costs associated with performing any Work covered or paid by an Allowance. Contractor shall be permitted to charge only its direct costs to perform the Work under an Allowance, as indicated through documentation approved by the District. Allowances shall be listed as a separate line item when submitting the schedule of values. Any mark ups over the amounts listed on the schedule of values will not be allowed. Any remaining Allowance balance available at the completion of the Project shall be credited to the District by a deductive change order. Contractor shall not deduct any costs including, but not limited to, bond costs, overhead and profit or other indirect costs when returning any unused Allowance amount to the District.

5. Project/Document Management Software.

5.1 The CONSTRUCTION MANAGER will provide access to a web based Project Document Control system (Procore) that will be utilized by the DISTRICT, CONTRACTOR, CONSTRUCTION MANAGER and ARCHITECT for the purposes of transmitting and filing all project documents. The CONTRACTOR shall be required to familiarize themselves with Procore Construction Software and free training sessions will be available prior to the start of construction for the purposes of transmission of Meeting Minutes, RFIs, Submittals, and Daily Reports. CONSTRUCTION MANAGER to coordinate online training session(s) through Procore for use and instruction. CONTRACTOR to ensure digital upload of PDF files are clear and legible. Any PCOs may be provided via email to the CONSTRUCTION MANAGER with the ARCHITECT carbon copied.

5.2 At the close of each working day, the CONTRACTOR shall submit a daily report to the CONSTRUCTION MANAGER documenting the name of all subcontractors, the quantity of workers for each subcontractor, the hours worked, the work

performed, and any operating equipment.

6. **Security.** In addition to the security requirements set forth elsewhere in the Contract, the Contractor must adhere to the following at each school site:

6.1 **Keys.** The CONTRACTOR'S site supervisor of the Work will be issued a key for that site at the beginning of the Work. The key must not be duplicated, and the CONTRACTOR is responsible for returning the key to the District when the Work at the site is complete.

6.2 **Locked Door Policy.** No building, room or site gate shall be left unsecured for any period of time when not occupied by the CONTRACTOR and/or after the CONTRACTOR'S daily work hours.

6.3 Contractor is responsible for site security for all items stored on site, in staging areas or construction site. Should the contractor require a security guard it shall be at the sole responsibility of the contractor and additional no cost to the District.

7. **Hours of work**. All construction and delivery activities shall be restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and from 8:00 a.m. to 5:00 p.m. on Saturdays, or as otherwise modified or amended.

8. **Project Manager.** The District's Project Manager is TELACU Construction Management (TCM). TCM's office is located at 6885 Orangethorpe Ave, Buena Park CA, 90620. All project correspondence shall be routed through the Project Manager, Attention: Jeffery Thomas unless otherwise directed. Phone: (714) 315-2299 email: jthomas@telacu.com.

Project Engineer. Karla Reveles Kreveles@telacu.com. (714) 659-0629

9. **CONSTRUCTION SCHEDULE**
Project Phasing. All work to be completed in one phase

The Board of Education or designee will award the contract. The District will issue a Notice to Proceed to complete construction of the Project in accordance with the Project Milestones. By submitting a bid, the Contractor acknowledges and agrees that the issuance of a Notice to Proceed shall not entitle the Contractor to any claims for delays or related damages including, but not limited to, direct costs, indirect costs, extended field overhead costs, home office overhead costs, labor and material escalation costs, costs arising from any alleged loss of productivity or inefficiencies, supervisory costs, administrative costs, and any other costs, expenses, damages or claims arising from or related to the issuance of a Notice to Proceed as noted in this section.

MAJOR PROJECT MILESTONES/DELIVERABLES

June 3, 2022	Start of Construction
August 12, 2022	Substantial Completion

SPECIAL CONDITIONS

10. PERFORMANCE REQUIREMENTS

10.1.1 All of CONTRACTOR'S schedules shall comply with the baseline and milestones as indicated in the "Milestone Schedule" attached hereto as Exhibit A, which milestones shall be incorporated into the Baseline Schedule, Project Schedule and any other schedules required by the Contract Documents.

10.1.2 Ensure adequate scheduling during construction activities so Work may be performed in an orderly and expeditious manner within stipulated Contract Time.

10.1.3 Ensure coordination of CONTRACTOR and SUBCONTRACTOR at all levels.

10.1.4 Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of products, materials and equipment.

10.1.5 Monitor progress of Work.

10.2 CONSTRUCTION SCHEDULE

10.2.1 CONTRACTOR shall develop and submit a Baseline Schedule as required by the Contract Documents. It shall be submitted in computer generated network format and shall be organized by Activity Codes representing the Contractor's intended sequencing of the Work, and with time scaled network diagrams of activities. The Baseline Schedule shall include activities such as mobilization, preparation of submittals, specified review periods, procurement items, fabrication items, milestones, and all detailed construction activities.

10.2.2 Weekly schedule updates will be required to be submitted to the DISTRICT starting upon the release of the Notice to Proceed. Weekly updates must be approved by the DISTRICT and presented to the project team at the weekly construction meeting. Should the weekly schedule fall behind the Milestone Schedule in Exhibit A the CONTRACTOR shall work at its own cost additional hours and/or shifts to bring the weekly schedule back in line with the Milestone Schedule. Additional hours and/or shift shall include but not limited to daily overtime, Saturday shifts and Sunday shifts.

11. TEMPORARY FACILITIES AND CONTROLS

11.1 LOGISTICS PLAN

11.1.1 CONTRACTOR shall provide to the DISTRICT for prior approval the CONTRACTOR'S mobilization and logistics plan for the Site which shall include, at a minimum, the provisions herein. See Exhibit B for contractor use of the site.

11.2 TEMPORARY UTILITIES

11.2.1 Sanitary Facilities

1 CONTRACTOR shall not utilize any existing sanitary facilities on site. CONTRACTOR shall provide Temporary Sanitary Facilities in accordance with OSHA requirements for all workers.

11.3 BARRIERS AND ENCLOSURES

11.3.1 CONTRACTOR shall obtain DISTRICT written permission for locations and types of temporary barriers and enclosures prior to their installation.

11.4 PUBLICITY RELEASES

11.4.1 CONTRACTOR shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s). CONTRACTOR shall not bring anyone onto the project site during or after construction for the purpose of publicity or marketing without prior written permission of the District.

12. SITE STANDARDS

12.1 REQUIREMENTS OF THE DISTRICT

12.1.1 Drug-Free Schools and Safety Requirements:

1 No drugs, alcohol, smoking or the use of tobacco products are allowed at any time in any buildings, CONTRACTOR-owned vehicles or vehicles owned by others while on DISTRICT property. No students, staff, visitors, or contractors are to use drugs on these sites.

2 CONTRACTOR shall post: "Non-Smoking Area" in a highly visible location on Site. CONTRACTOR may designate a smoking area outside of DISTRICT property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area must be kept clean at all times.

3 CONTRACTOR shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.

12.1.2 Language:

1 Unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students or public will not be allowed.

12.1.3 Disturbing the Peace (Noise and Lighting):

1 CONTRACTOR shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or

state laws, ordinances, and/or regulations regarding noise and allowable noise levels.

2 DISTRICT reserves the right to prohibit the use of radios at the Site, except for handheld communication radios.

3 If portable lights are used after dark, the lights must be located so as not to direct light into neighboring properties.

12.1.4 Traffic:

1 Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require. Contractor shall not have any deliveries to the Project during the hour before school begins at the Site and during the half hour after school ends at the Site without prior written permission from the CONSTRUCTION MANAGER or the DISTRICT.

2 All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by DISTRICT in advance.

3 DISTRICT shall designate a construction entry to the Site. If CONTRACTOR requests, DISTRICT determines it is required, and to the extent possible, DISTRICT shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with DISTRICT and at CONTRACTOR'S expense.

4 Parking areas shall be reviewed and approved by DISTRICT in advance. No parking is to occur under the drip line of trees or in areas that could otherwise be damaged.

12.1.5 Site Cleanness: The site shall at all time be clean of excess materials and construction debris. At the end of each work day the contractor shall leave the site in broom swept condition free of all construction debris.

13. Pay applications. The Schedule of Values cost breakdown to be itemized as described in Article 9 of the General Conditions.

END OF DOCUMENT

EXHIBIT A ("SCOPE OF WORK")

CHARLES G. EMERY ELEMENTARY SCHOOL
8600 Somerset Street
Buena Park, CA 90621
DSA Approved Project Manual.
Authored by: Studio W Architects.
Dated: 11/01/2021.

DSA Approved Plans dated: 11/01/2021.
APP: 04-120370.
As drawn by: Studio W Architects.

Addenda (if applicable)

ARTHUR F. COREY ELEMENTARY SCHOOL
7351 Holder Street
Buena Park, CA 90620
DSA Approved Project Manual
Authored by: Studio W Architects
Dated: 10/27/2021

DSA Approved Plans dated: 10/27/2021.
APP: 04-120369.
As drawn by: Studio W Architects.

All Addenda (if applicable)

CARL E. GILBERT ELEMENTARY SCHOOL
7255 8th Street
Buena Park, CA 90621
DSA Approved Project Manual.
Authored by Studio W Architects.
Dated: 03/11/2022.

DSA Approved Plans dated 03/11/2022.
APP: 04-120688.
As drawn by: Studio W Architects.

All Addenda (if applicable)

JAMES A. WHITAKER ELEMENTARY SCHOOL
8401 Montana Avenue
Buena Park, CA 90621

DSA Approved Project Manual.
Authored by Studio W Architects.
Dated: 03/15/2022.

DSA Approved Plans dated 03/15/2022.
APP: 04-120689.
As drawn by: Studio W Architects.

All Addenda (if applicable)

CHARLES G. EMERY ELEMENTARY SCHOOL - MULTI-PURPOSE ROOM ALTERATION

DSA File No. 30-4
App. No. 04-120370
PTN. 66456-40

BUENA PARK SCHOOL DISTRICT

PROJECT MANUAL

OCTOBER 26, 2021

PROJECT #21009

Studio W Architects

SEALS PAGE

BUENA PARK SCHOOL DISTRICT
CHARLES G. EMERY ELEMENTARY SCHOOL -MULTI-PURPOSE ROOM ALTERATION

OWNER:
Buena Park School District
6885 Orangethorpe Ave.
Buena Park, CA 90620

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120370 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

ARCHITECT:
Studio W Architects
400 Spectrum Center Drive
Suite 1640
Irvine, CA 92618

By: _____ 10/15/2021
Brian P. Whitmore, AIA, LEED AP — Date Signed
President & CEO

LICENSED ARCHITECT
BRIAN P. WHITMORE
No. C 30345
Ren. 9/30/23
STATE OF CALIFORNIA

CIVIL ENGINEER:
KPFF Consulting Engineers
18400 Von Karman Ave.
Suite 600
Irvine, CA 92612

By: _____ 10/15/2021
Ali Khamsi, PE — Date Signed
Managing Principal

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA

STRUCTURAL ENGINEER:
Welsh Structures, Inc.
12722 Barrett Ln, Santa Ana, CA 92705

By: _____ 10/15/2021
Stephanie Welsh, S.E., Leed AP — Date Signed
President

REGISTERED PROFESSIONAL ENGINEER
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Exp. 6-30-22
STRUCTURAL
STATE OF CALIFORNIA

PLUMBING ENGINEER:
Pocock Design Solutions
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By: _____ 10/15/2021
Andrew Gossman, PE, HFDP, LEED AP BD+C — Date Signed
Principal

REGISTERED PROFESSIONAL ENGINEER
ANDREW R. GOSSMAN
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STATE OF CALIFORNIA

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS
011000 Summary Studio W
012300 Alternates Studio W
012600 Contract Modification Procedures Studio W
012900 Payment Procedures Studio W
013100 Project Management and Coordination Studio W
013200 Construction Progress Documentation Studio W
013300 Submittal Procedures Studio W
014000 Quality Requirements Studio W
014200 References Studio W
015000 Temporary Facilities and Controls Studio W
016000 Product Requirements Studio W
017300 Execution Requirements Studio W
017419 Construction Waste Management Studio W
017700 Closeout Procedures Studio W
017823 Operation and Maintenance Data Studio W
017839 Project Record Documents Studio W
017900 Demonstration and Training Studio W

DIVISION 2 - SITE CONSTRUCTION
024119 Selective Demolition Studio W

DIVISION 3 - CONCRETE
031000 Concrete Forming and Accessories Welsh
032000 Concrete Reinforcing Welsh
033000 Cast-In-Place Concrete Welsh

DIVISION 5 - METALS
051200 Structural Steel Framing Welsh
055000 Metal Fabrications Studio W

DIVISION 6 - WOOD AND PLASTICS
061000 Rough Carpentry Welsh
062000 Finish Carpentry Welsh
064100 Paneling Studio W
068200 Fiber Reinforced Plastic (FRP) Panels Studio W

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
071909 Concrete Moisture and Alkalinity Testing Studio W
071920 Concrete Moisture and Alkalinity Barrier Studio W
072100 Building Insulation Studio W
076500 Flexible Sheet Flashing Studio W
079200 Joint Sealants Studio W

DIVISION 8 - DOORS AND WINDOWS
081113 Steel Doors and Frames Studio W
081416 Flush Wood Doors Studio W
083113 Access Doors and Frames Studio W

083214 Folding Aluminum-Framed Glass Doors Studio W.
084113 Aluminum-Framed Entrances and Storefronts Studio W
087100 Door Hardware Allegion
088000 Glazing Studio W

DIVISION 9 – FINISHES
092900 Gypsum Board Studio W
093000 Tiling Studio W
095123 Acoustical Tile Ceilings Studio W
096519 Resilient Tile Flooring Studio W
099100 Painting Studio W

DIVISION 10 - SPECIALTIES
101100 Visual Display Surfaces Studio W
101400 Signage Studio W
102800 Toilet and Bath Accessories Studio W
104400 Fire Protection Specialties Studio W

DIVISION 11 - EQUIPMENT
115217 Assistive Listening Devices Studio W

DIVISION 12 - FURNISHINGS
122116 Vertical Louver Blinds Studio W
126815 Folding Tables and Benches Studio W

DIVISION 22 – PLUMBING
220513 Common Motor Requirements for Plumbing Equipment Pocock
220518 Escutcheons for Plumbing Piping Pocock
220523 General-Duty Valves for Plumbing Piping Pocock
220529 Hangers and Supports for Plumbing Piping and Equipment Pocock
220553 Identification for Plumbing Piping and Equipment Pocock
220719 Plumbing Piping Insulation Pocock
221116 Domestic Water Piping Pocock
221119 Domestic Water Piping Specialties Pocock
221316 Sanitary Waste and Vent Piping Pocock
22421313 Commercial Water Closets Pocock
224216.13 Commercial Lavatories Pocock
224713 Drinking Fountains Pocock

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING - none

DIVISION 26 – ELECTRICAL - none

DIVISION 31 – EARTHWORK
311000 Site Clearing KPFF

DIVISION 32 - EXTERIOR IMPROVEMENTS
320120 Detectable Warning Surfaces Studio W
321216 Hot-Mix Asphalt (HMA) Paving KPFF
321313 Concrete Paving KPFF

323113 Chain-Link Fences and Gates Studio W

END OF TABLE OF CONTENTS

DIVISION 1
GENERAL REQUIREMENTS

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Use of premises.
   3. Work restrictions.
   4. Specification formats and conventions.
   5. Pollution Control.
   6. Storm Water Pollution Prevention Plan.
   7. Lead-Containing materials.
   8. Additional DSA requirements.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Multi-Purpose Room Alteration.

B. Project Location: Charles G. Emery Elementary School.

C. Architect: Studio W Architects.

D. The Work consists of the following:
   1. The Work includes alteration of multi-purpose room and site work.
   2. The intent of these drawings and specifications is that the alteration, rehabilitation or reconstruction is to be in accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the contract documents wherein the finished work will not comply with Title 24, California Code of Regulations, a Construction Change Document, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by Division of the Sate Architect before proceeding with the repair work.

1.4 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.5 WORK RESTRICTIONS

A. On-Site Work Hours:
   1. Work shall be generally performed inside the existing building during normal business working hours of 8 a.m. to 5 p.m., Monday through Friday, except otherwise indicated.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI's MasterFormat 2004 numbering system.
   1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
   2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.7 POLLUTION CONTROL

A. Provide positive methods, means and facilities required to prevent contamination of the soil, water or atmosphere by the discharge of noxious substances from the construction operations.

1.8 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. The contractor shall submit a Storm Water Pollution Prevention Plan for approval by the City's Public Works and Community Development Departments. The plan shall show erosion control measures and indicate locations of staging, fueling, equipment and employee parking, and storage/stockpile locations. Locations for concrete washout shall be shown, as well as gravel site entrances and/or metal grates to keep soil from being deposited on City streets. The plan shall note that street sweeping shall occur as often as necessary, to ensure that no dirt or dust will remain on City streets. Drip pans shall be used under parked equipment and visqueen shall be shown on the plan to protect the soil in the fueling area. Only minor vehicle maintenance shall occur on-site. Maintenance shall occur in the fueling area and soil shall be protected by drip pans and visqueen.

B. Prepare a Storm Water Pollution Prevention Plan (SWPPP) and file a Notice of Intent with the State Water Resources Control Board for this project. The SWPPP will provide Best Management Practice (BMP) methods and controls for wet weather grading activities and erosion control for both onsite and offsite improvements, in accordance with the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The SWPPP shall include an erosion control plan.

1.9 MISCELLANEOUS PROVISIONS

A. General: Comply with the Project Conditions of Approval for both noise and dust control. If there is any conflict between drawings and specifications and the Project Conditions of Approval regarding noise and dust control, the Project Conditions of Approval shall govern.

B. Noise Control: The Contractor shall install noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction Equipment noise at the Site shall be limited and only as permitted by applicable law, rule or regulation. If classes are in session at any point during the progress of the Work, and, in the Owner's reasonable discretion, the noise from any Work disrupts or disturbs the students or faculty or the normal operation of Owner, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

C. Dust Control. The Contractor shall be fully and solely responsible for maintaining and upkeeping all areas of the Site and adjoining areas, outdoors and indoors, free from flying debris, grinding powder, sawdust, dirt and dust as well as any other product, product waste or work waste, that by becoming airborne may cause respiratory inconveniences to persons, particularly to students and Owner's personnel. Additionally, the Contractor shall take specific care to avoid deposits of airborne dust or airborne elements. Such protection devices, systems or methods shall be in accordance with the regulations set forth by the EPA and OSHA, and other applicable law, rule or regulation. Additionally, the Contractor shall be the sole party responsible to regularly and routinely clean up and remove any and all deposits of dust and other elements. Damage and/or any liability derived from the Contractor's failure to comply with these requirements shall be exclusively at the cost of the Contractor, including, without limitation, any and all penalties that may be incurred for violations of applicable law, rule or

regulation, and any amounts expended by the Owner to pay such damages shall be due and payable to the Owner on demand. Contractor shall replace any damages property or part thereof and professionally clean any and all items that become covered or partially covered to any degree by dust or other airborne elements. If classes are in session at any point during the progress of Work, and, in the Owner's reasonable discretion, flying debris, grinding powder, sawdust, dirt or dust from any Work disrupts or disturbs the students or faculty or the normal operation of the college, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal college hours and make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

1.10 LEAD-CONTAINING MATERIALS.

A. The Contractor shall assume that all ceramic tile and painted or varnished surfaces in the school district contain detectable levels of lead which trigger compliance with California Code of Regulation, Title 8, Section 1532.1. In addition, waste products from these materials could contain lead at levels which are subject to the hazardous waste requirements in the California Code of Regulations, Title 22, Sections 666260.1 - 66263.12 and 66268.1 - 66268.124 and the health and Safety Code Section 25157.8 and 25163, subdivision (c).

B. It is the Contractor's responsibility to handle and dispose of these materials in accordance with the regulations. If failure to comply with these regulations results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective action.

C. Lead-based paint should be removed only by professionals trained in hazardous material removal. A trained professional must follow very detailed procedures to minimize, control and contain lead dust generated by the removal process.
   1. The room should be sealed from the rest of the building. All furniture, carpets and drapes should be removed.
   2. Workers should wear respirators designed to avoid inhaling lead.
   3. No eating or drinking should be allowed in the work area. All food and eating utensils should be removed from the room. All cabinets as well as food contact surfaces should be covered and sealed.
   4. Occupants should be kept out of the room until the job is completed.
   5. Clothing worn in the room should be disposed of after working. The work clothing should not be worn in other areas of the building.
   6. Debris should be cleaned up using special vacuum cleaners with HEPA (high efficiency particle absorption) filters. A wet mop should be used after vacuuming.

1.11 ADDITIONAL DSA REQUIREMENTS

A. Comply with the following:
   1. Compliance with Title 24, for Parts 1-6 and 9.
   2. Title 24, Parts 1-5 shall be kept on site during construction.
   3. If any conflict or inconsistencies exist between the specifications and the drawings (including the general notes), more stringent requirements shall take precedence.
   4. Addenda:

a. In accordance with Section 4-338(a) of the California Administrative Code, changes or alterations of the approved plans and specifications prior to the letting of a construction contract for the Work shall be made by means of addenda, which shall be submitted to and approved by Division of the Sate Architect (DSA) prior to distribution to contractors.
b. Addenda shall be stamped and signed by Architect or Engineer in general responsible charge of preparation of the plans and specifications, and by the Architect or Engineer delegated responsibility for the portion affected by the addenda.
c. Addenda issued during bidding, if any, will be inserted following this page in the Contract Documents sets issued for construction. The provision of all addenda shall become part of the Contract Documents and Contractor shall be obligated to construct the Project in accordance with the Contract Documents as modified or supplemented by the addenda provisions.

5. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation. (IR-A6) (Section 4-338(c), Part 1)
6. Construction Change Document (Section 4-338 (c), Part 1) must be signed by all the following:
   a. A/E of Record.
   b. Owner (change order only).
   c. SEOR (when applicable).
   d. Delegated Professional Engineer (when applicable).
   e. DSA.
7. Project Inspector and testing lab must be employed by the Owner and approved by all of the following:
   a. A/E of Record.
   b. SEOR (when applicable).
   c. DSA.

B. Tests and Inspections - Chapter 17A:
1. All tests shall be performed by a testing facility acceptable to the architect and DSA. The testing facility shall be directly employed by the school district and no other entity or individual. Section Title 24, Part 1, Section 4-333 and 4-335.
2. Test reports shall be addressed to, and sent to, the school district by the testing facility. Copies of all test reports shall be sent to DSA, the architect, the structural engineer, and the project inspector by the testing facility. All reports shall be sent within 14 days of the date of the test. See Title 24, Part 1, Section 4-333 and 4-335.
3. A Verified Report, sighed by the California licensed civil engineer in charge of the testing facility which conducted the tests, shall be submitted to DSA upon completion of the project. The verified report shall state that all tests and inspections were made as required by the DSA approved documents. If the tests or inspections indicate that materials or workmanship did not meet the requirements of the DSA approved documents, the Verified Report shall list all noncompliant work. A copy of all test reports involving unresolved noncompliant work shall be attached to the Verified Report. In the event that not all required tests or inspections were made by the testing facility making this verified report, those tests and inspections not made shall be listed on the Verified Report. See Title 24, Part 1, Section 4-333 and 4-335.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. All substitutions affecting access compliance safety, fire life safety, or structural safety shall be considered as Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE

A. As indicated on Drawings.

END OF SECTION 012300

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:
   1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect may issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, or Changes not affecting the Structural Safety, Access Compliance or Fire & Life Safety portions of the work, on AIA Document G710, "Architect's Supplemental Instructions" or an equivalent form acceptable to District and subject to DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements for DSA Construction Change Document – Category B.

1.4 PROPOSAL REQUESTS (BULLETIN)

A. Owner-Initiated Proposal Requests: Architect may issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.5 CONSTRUCTION CHANGE PROCESS - DSA

A. Changes or alterations of the approved plans or specifications after a contract for the work has been let affecting the Structural, Access or Fire-Life Safety portions of the project shall be made only by means of Construction Change Documents submitted to and approved by DSA prior to commencement of the work shown thereon. Construction Change Documents shall comply with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements. Construction Change Documents shall be made using DSA form 141 and state the reason for the change and the scope of work to be accomplished, and, where necessary, shall be accompanied by supplementary drawings referenced in the text of the change order. All Construction Change Documents and supplementary drawings shall be stamped and signed by the architect or engineer in general responsible charge of observation of the work of construction of the project and by the architect or registered engineer delegated responsibility for observation of the portion of the work of construction affected by the change order, shall bear the approval of the school board and shall indicate the associated change in the project cost, if any. One copy of each Construction Change Documents is required for the files of DSA.

B. Construction Change Documents shall be signed by Architect of Record, Owner, Structural Engineer (when applicable), Delegated Professional Engineer (when applicable), and DSA.

C. No changes shall be made to approved documents without DSA approval.

D. All Construction Change Documents shall be signed by Architect and approved by DSA.

1.6 CONSTRUCTION (FIELD) CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with Continuation Sheets.
      b. Submittals Schedule.
      c. Contractor's Construction Schedule.
   2. Submit the Schedule of Values to Architect at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.
   3. No payment applications will be signed by the Architect prior to the Contractor submitting, and the Architect reviewing, a schedule of values.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Submit draft of AIA Document G703 Continuation Sheets.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.
      1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times:
   1. The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
   2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor's Construction Schedule (preliminary if not final).
   4. Products list.
   5. Schedule of unit prices.
   6. Submittals Schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   9. Copies of building permits.
   10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   11. Initial progress report.
   12. Report of preconstruction conference.
   13. Certificates of insurance and insurance policies.
   14. Data needed to acquire Owner's insurance.
   15. Initial settlement survey and damage report if required.

G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Project meetings.
   2. Requests for Interpretation (RFIs).

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for electronic submittals.
   2. Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
   3. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   4. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Submit electronic submittals directly to extranet specifically established for Project.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
4. Frequency of Attendance by Architect: Limited by Architect/Owner Contract.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing, if any.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for RFIs.
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Distribution of the Contract Documents.
   j. Submittal procedures.
   k. Preparation of Record Documents.
   l. Use of the premises.
   m. Work restrictions.
   n. Owner's occupancy requirements.
   o. Responsibility for temporary facilities and controls.
   p. Construction waste management and recycling.
   q. Parking availability.
   r. Office, work, and storage areas.
   s. Equipment deliveries and priorities.
   t. First aid.
   u. Security.
   v. Progress cleaning.
   w. Working hours.
3. Minutes: Record and distribute meeting minutes electronically.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. The Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written recommendations.
   n. Warranty requirements.
   o. Compatibility of materials.

p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
1) Review schedule for next period.
b. Review present and future needs of each entity present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.

15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes electronically.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.6 RFIs:

A. General:
   1. Contractor may submit a RFI to the Architect seeking clarification or interpretation of the contract documents. If in the Contractor's opinion the nature of the RFI requires a discussion, rather than simply an answer, the Contractor shall call the Architect to have such a discussion. The results of that discussion as well as all other RFI's must be presented in writing on a form approved in advanced by the Architect along with any supporting information or data, as well as the Contractor's recommended resolution. An oral RFI or a RFI presented on an unapproved form, or without adequate supporting information and Contractor's recommended solution, will be attributed solely to the contractor. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction means, methods, techniques, sequences, or procedures of the Contractor.
   2. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
   3. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information which is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the Architect in responding to a RFI.
   4. Architect's response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

B. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

C. Frivolous or Unnecessary RFIs: Cost of design professional’s time will be billed or deducted from progress payment.

D. Electronic RFIs: Follow vendor's instruction.
   1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow 21 days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

F. RFI Log: Prepare, maintain, and submit as instructed by electronic submittal vendor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. RFI Form.

END OF SECTION 013100

RFI FORM

Project:	RFI No:
Project No:	
To:	Date:
From:	

Subject:
Discipline: Category
Specification Section Title:
Section Number: Page: Article/Paragraph:
Sheet Number: Detail:

Question:

Suggestion:

☐Attachment:

Undersigned certifies:

- Both drawings and specification sections were thoroughly reviewed.
- Processing time for frivolous RFIs will be charged back to Contractors at A/E billable rates.

Desired Response Date:	(However, A/E still have specified days to respond.)
Cost Impact: $	Schedule Impact: days
Drawing Impact:	Submitted by:
Signed:	Date:

Answer:

Answered by:

Signed: Date:

Copies: ☐ Owner ☐Consultants ☐ ☐
☐ File

1. A/E review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
2. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information that is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the A/E in responding to a RFI.
3. A/E response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

End of RFI Form

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Three Week Look-Ahead Schedule.
   4. Daily construction reports.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
   2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
   3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
   4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's final release or review.

B. Contractor's Construction Schedule: Submit three opaque copies of schedule, large enough (minimum 11 x 17) to show entire schedule for entire construction period.

C. Daily Construction Reports: Submit two copies at weekly intervals.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Concurrent with the development of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the submittal schedule with the Contractor's construction schedule described above.
   1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
   2. The Architect will review the schedule and indicate which submittals may be deleted from the submission requirement. The deletion of the submittal requirement for an item does not release the Contractor from any requirements of the Construction Contract, General Conditions or Plans and Specifications.

B. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
   1. Scheduled date for the first submittal.
   2. Related Section number.
   3. Submittal category.
   4. Name of subcontractor.
   5. Description of the part of the Work covered.
   6. Scheduled date for resubmittal.
   7. Scheduled date the Architect's final release or review.

C. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 15 days of the date established for "Commencement of the Work". The Construction Schedule must be submitted and accepted prior to approval of first pay application.
   1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as identified in the "Schedule of Values".
   2. Within each time bar indicate estimated completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
   3. Prepare the schedule on a sheet, or series of sheets, of stable reproducible media, of sufficient width to show data for the entire construction period.
   4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
   5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
   6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating "pre-calculated" and "actual" costs. On the line show dollar-volume of work performed as of the dates used for preparation of payment requests.
   1. Refer to Section "Payment Procedures" for cost reporting and payment procedures.

2.3 THREE WEEK LOOK-AHEAD SCHEDULE

A. Prepare weekly (or as determined by scheduled meeting times), prior to Project meetings, a computer-generated 3-week look-ahead schedule (bar chart) which is consistent with the Contractors schedule and depicts daily labor activities. The schedule will consist of the prior week, current week and the following 3 weeks.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial Completions and occupancies.
   19. Substantial Completions authorized.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates changes, including, but not limited to, changes in durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of reviewed schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Submittals Schedule Form.

END OF SECTION 013200

SUBMITTAL SCHEDULE FORM

☐ Preliminary Submittal Schedule: Include submittals required during the first 60 days of construction.
☐ Complete Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

Project: From:

To: Date:

Scheduled Initial Submittal Date	**Spec Section**		**Type:** ☐ **Action** ☐ **Info Only**	**Name of Subcontractor**	**Description**	**Scheduled Date of Approval**
	No.	**Title**				

End of Submittal Schedule Form

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for electronically submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Consult individual sections of specifications for specific submittals required under those sections and for further details and descriptions of requirements.

C. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports.
5. Division 1 Section "Closeout Procedures" for submitting warranties.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
9. Other Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Processing: All costs for electronic submittal, printing, preparing, packaging, mailing, or delivering submittals for initial submittals and all costs for re-printing, re-drawing, re-drafting, re-packaging, re-submitting, and re-mailing or re-delivering as required for all re-submittals shall be included in Contract Sum.

B. Sequence: Transmit each submittal in sequence which will not result in Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

E. Multiple Reviews: The Contractor shall also be responsible for all costs to Architect or Architect consultants for reviews requiring more than 2 reviews for same specification section.

F. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Review: Allow 21 days for review of each submittal. Architect will request for more time if needed.

G. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked "Approved" or "Furnish as Noted".

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating approval by Architect.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
   1. Submit request using attached form at end of section.
      a. Indicate date, project name, contractor name, address, and specific drawing (sheet number) required.
      b. Signed by Contractor agreeing with terms and conditions.

PART 2 - PRODUCTS

2.1 ELECTRONIC SUBMITTALS

A. General: Prepare and submit Submittals required by individual Specification Sections.
   1. Submit electronic submittals directly to extranet specifically established for Project.
   2. Vendor:
      a. Submittal Exchange (Basis of Design)
      b. Or equal.
   3. Contractor shall pay for all-inclusive use of Submittal Exchange by all project team members; data storage, security, and backup; setup, training, and support; and archiving once construction is complete.
      a. Documentation processed, housed and archived shall include but not limited to: Submittals, Addendum, Plans, Specs, Field Reports, Photos, Weekly Reports, Notice of deviations, Punch List, RFI's RFP's ASI's, CCD's, Cost Proposals, Test Reports, Meeting Notes., and Close Out.

2.2 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
      a. Circle items applicable.
      b. Cross-out items not applicable.
      c. Select item number if required.
   3. Submittal data must include complete documentation relating to all the specified features
   4. Include the following information, as applicable:
      a. Manufacturer's Submittal Form with all the options selected when available.
      b. Manufacturer's written recommendations.
      c. Manufacturer's product specifications.
      d. Manufacturer's installation instructions.
      e. Standard color charts.
      f. Manufacturer's catalog cuts.
      g. Wiring diagrams showing factory-installed wiring.

h. Printed performance curves.
i. Operational range diagrams.
j. Mill reports.
k. Standard product operation and maintenance manuals.
l. Compliance with specified referenced standards.
m. Testing by recognized testing agency.
n. Application of testing agency labels and seals.
o. Notation of coordination requirements.

5. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Do not use words "by others." Identify exactly who is responsible for the work.
   c. Identification of products.
   d. Fabrication and installation drawings.
   e. Roughing-in and setting diagrams.
   f. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   g. Shopwork manufacturing instructions.
   h. Templates and patterns.
   i. Schedules.
   j. Design calculations.
   k. Compliance with specified standards.
   l. Notation of coordination requirements.
   m. Notation of dimensions established by field measurement.
   n. Relationship to adjoining construction clearly indicated.
   o. Seal and signature of professional engineer if specified.
   p. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit 4 sets of prints and one electronic copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.

F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.3 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be

signed by an officer or other individual authorized to sign documents on behalf of that entity.

2. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

2.4 DEFERRED APPROVALS AND DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit 3 copies of a statement, signed and sealed by Structural Engineer Licensed in California, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
   1. Coordinate the work; do not delegate responsibility for coordination to any subcontractor.
   2. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
   3. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections.
   4. Trade submittals with “By Others”, “By General Contractor”, or similar coordination and work scope are not allowed. Identify, acknowledge, and resolve scope of work prior to submittal by Contractor. No extras will be allowed. Provide complete and coordinated submittals.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

F. Architect's and Consultant's review shall neither be construed as complete check nor relieve the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission as specified.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Electronic Files Transfer - Architectural Form.

END OF SECTION 013300

Subject: Architectural Electronic Files

Date: _____

Contractor Name: _____

Address: _____

Project: _____

At your request, we will provide electronic files for your convenience and use in the preparation of shop drawings related to _____, subject to the following terms and conditions:

Our electronic files are compatible with AutoCAD. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in the preparation of shop drawings for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub consultants that may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and/or involvement from each electronic display.

We will furnish you electronic files of the following architectural drawings: _____.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

If these terms are acceptable to you, please sign in the space provided below as evidence of our mutual understanding and agreement for this service. One signed copy of this agreement shall be returned to our office prior to delivery of the electronic files.

Very truly yours,

Architect

_____ _____

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:
   1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
   2. Other Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups:

1. Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
2. Comprehensive, completely integrated mockups of separate trades showing interface conditions, transitions, and relationships between materials and finishes.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A licensed professional engineer who is legally qualified to practice in California and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An DSA approved NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

A. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

D. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

E. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes list of references.

1.3 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. “AHJ”: Agency having jurisdiction.

C. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

D. “Compatible”: When used for products, it shall comply with requirements including products recommended/ required by the manufacturer for warrantee acceptance.

E. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

I. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

J. “Owner”: As defined in Division 1 section “Summary”.

K. "Provide": Furnish and install, complete and ready for the intended use.

L. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
   2. Copies of standards and applicable building codes (Title 24 Parts 1-5) shall be kept on-site during construction.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations.

E. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

F. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

G. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include the following:
1. Division 1 Section "Summary" for limitations on utility interruptions and other work restrictions.
2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 1 Section "Execution Requirements" for progress cleaning requirements.
4. Other Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service:
1. Owner's existing sewer system is available for use without metering but will be billed to Contractor for use charges.

C. Water Service:
1. Water from Owner's existing water system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

D. Electric Power Service:

1. Electric power from Owner's existing system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

E. Sanitary Facilities:
1. Pay sanitary service use charge for temporary toilets, wash facilities, and drinking water for use of construction personnel.

1.5 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with 2019 CEC.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized steel bases for supporting posts.

B. Wind Screen Fabric: Green.

2.2 TEMPORARY FIELD OFFICES

A. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading located within construction area or within 30 feet of building lines. Comply with NFPA 241.

B. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

C. Sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices and pay for services for following:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack board.
   3. Drinking water and private toilet.
   4. Coffee machine and supplies.
   5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
   6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
   7. Internet access:
      a. DSL or Cable (if available) service separate from the dedicated telephone line to field office and Inspector's/Architect's field office at time of project mobilization. Provide high speed connection, maintain and pay for usage.
      b. Internet access shall be through wireless WiFi router, 100 Mbps minimum.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, electric, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
   1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Install temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Install temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Install temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Install electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Install temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

A. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

B. Parking: Provide temporary or use designated areas of Owner's existing parking areas if approved for construction personnel.

C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

D. Project Identification and Temporary Signs: Provide Project identification. Install signs where directed to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.
   3. Provide a 4'-0" x 8'-0" project sign constructed of 1/2 inch plywood or 10 mil corrugated mounted to 4"x4" posts 8'-0" long set 2'-0" deep into earth.
   4. Project sign shall include a graphic of the building (available from the Architect), Architect, Consultants, District, project, funding members with titles, and Contractor with contact information for the contractor. Text and layout shall be submitted for approval prior to installation.
   5. Location of project sign shall be coordinated with District's representative.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

F. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 1 Section "Summary."

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
   1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or as indicated on Drawings.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

F. Install full coverage with green wind screen fabric to block viewing through construction fencing. Wind screen fabric shall be anchored or weighted sufficiently to resist design wind loads indicated on Drawings.

G. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Construct dustproof partitions with 2 layers of 3-mil polyethylene sheet on each side. Cover floor with 2 layers of 3-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
   3. Insulate partitions to provide noise protection to occupied areas.
   4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
   5. Protect air-handling equipment.
   6. Weather strip openings.
   7. Provide walk-off mats at each entrance through temporary partition.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses.
   1. Prohibit smoking in construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and product substitutions.

B. Related Sections include the following:
   1. Division 1 Section "References" for applicable industry standards for products specified.
   2. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Other Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Proposed products by manufacturers not listed in Manufacturers list.

C. Basis-of-Design: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating “or equal” products of other named manufacturers.

D. District Standard: Where a specific manufacturer's product is named and accompanied by the words "District Standard," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics pre-selected by the District.
   1. District seeks to match products currently in use on other campuses; No substitution allowed.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
   1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
   2. Form: Tabulate information for each product under the following column headings:
      a. Specification Section number and title.
      b. Generic name used in the Contract Documents.
      c. Proprietary name, model number, and similar designations.
      d. Manufacturer's name and address.
      e. Supplier's name and address.
      f. Installer's name and address.
      g. Projected delivery date or time span of delivery period.
      h. Identification of items that require early submittal approval for scheduled delivery date.
   3. Completed List: Submit 3 copies of completed product list within days specified in General Conditions. Include a written explanation for omissions of data and for variations from Contract requirements.
   4. Architect's Action: Architect will respond in writing to Contractor within 21 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use form provided at end of Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, environmental, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: Architect will notify Contractor of acceptance or rejection of proposed substitution within 21 days of receipt of request.
   a. Form of Acceptance: Change Order.
   b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. All substitutions affecting the Structural, Access or Fire-Life Safety portions of the project shall be submitted to DSA for approval as a Construction Change Directive in accordance with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements.

D. The cost for any additional design or engineering required to gain DSA approval of a substitution shall be borne solely by the contractor. Any delay impacts resulting from DSA review and approval of substitutions shall be borne solely by the contractor.

E. Named Product and Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

F. District Standard Products Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Changes to the approved drawings and specifications shall be made by an addendum or a Construction Change Document approved by the Division of the State Architect, as required by Section 4-338, Part 1, Title 24, CCR.

B. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
   3. Refer to other sections for specific content requirements and particular requirements for submitting special warranties.

C. Warranty Period: Warranty period specified in each sections are minimum requirements. Do not modify manufacturer’s standard warranty period if the manufacturer’s warranty has longer warranty period.

D. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
   6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
   3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
   5. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or an equal product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with “or equal”.

6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Product Substitutions" Article to obtain approval by Architect for use of an unnamed product.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
   a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include custom or premium items.
   b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes standard, custom, and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 35 days after the Notice to Proceed**.** Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   2. Requested substitution does not require extensive revisions to the Contract Documents.
   3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   4. Substitution request is fully documented and properly submitted.
   5. Requested substitution will not adversely affect Contractor's Construction Schedule.
   6. Requested substitution has received necessary approvals of authorities having jurisdiction and has paid any fees.
   7. Requested substitution is compatible with other portions of the Work.
   8. Requested substitution has been coordinated with other portions of the Work.
   9. Requested substitution provides specified warranty.
   10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

11. Furnish samples upon requested by Architect.
12. Attached Request for Substitution Form shall used for substitution requests.

C. Substitutions for products or systems involving structural, fire/life safety and access compliance will be considered a Construction Change Document or Addendum, and will require DSA approval. This will add time required to review those substitutions requiring DSA approval. Contractor is solely responsible for all documentation and time required to obtain DSA approval.
   1. The use of a product other than specified or noted on the Drawings will require the Contractor to get Engineer, Architect and DSA approval.
   2. The Contractor shall be responsible to provide any information, calculations or drawings to show compliance with the DSA approved drawings and provide all documentation to the Architect and/or Engineer of record.
   3. Any changes or "substitutions" that impact or relate to DSA requirements for structural, ADA or fire and life safety MUST be approved by DSA prior to proceeding with the work.
   4. The Contractor shall also be responsible for all costs to the DSA, Architect or Architect consultants for review, co-ordination, and approval by the DSA.
      a. All costs for submittal to DSA and Architect/ design team expenses shall be back charged to the Contractor.

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Product List Form.
   2. Similar Installation List Form.
   3. Substitution Request Form.

END OF SECTION 016000

SUBSTITUTION REQUEST FORM

Substitutions are only allowed within number of days specified. Use this for m for requesting "or equal" products and materials.

Project:	Substitution Request Number:
	From:
To:	Date:
	Project Number:

Specification Section Title:		
Section Number:	Page:	Article/Paragraph:
Specified Item:		

Proposed Substitution:	
Manufacturer:	Address:
Contact Name:	Phone Number:
☐ Comparison between proposed substitution and specified product is attached. Note all differences.	

Reason for not using specified item:
☐ Specified product is no longer available.
☐ Substitution will improve lead time by _____ days
☐ Substitution will save Owner $ _____
☐ Other:

☐ List 3 similar installations including project name, address, owner, and date installed is attached.
Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explanation attached.

Supporting Data Attached:
☐ Product Data (indicate any options to be included)
☐ Drawings ☐ Test Reports ☐ Samples ☐ Color Chart ☐ Other:

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will not affect or delay Construction Progress Schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

- Substitutions for products or systems involving structural, fire/life safety and access compliance will require AHJ approval. This will add time required to review those substitutions requiring AHJ approval. Contractor is solely responsible for all documentation, cost, and time required to obtain AHJ approval.

Submitted by:	Firm:
Signature:	Date:
Comments:	

A/E Review:
☐ Approve Substitution.
☐ Approve Substitution as Noted.
☐ Reject Substitution. Use specified product.
☐ Reject Substitution. Use specified product. Substitution request received too late.

Signed by:	Date:
Comments:	

Owner's Review and Action (Approval of substitution is not valid without Owner's signature)
☐ Substitution approved.
☐ Substitution approved as Noted.
☐ Substitution rejected. Use specified product.

Signed by:	Date:

Comments:

End of Substitution Request Form

PRODUCT LIST FORM

☐ Preliminary Product List.
☐ Complete Product List.
Include a written explanation for omissions of data and for variations from Contract requirements.

Project: ______________________________ From: ______________________________

To: ______________________________ Date: ______________________________

Spec Section		Early approval? ☐ Yes ☐ No	Product	Model No.	Manufacturer	Supplier	Installer	Delivery Date
No.	Title							

End of Product List Form

SIMILAR INSTALLATION LIST FORM

Provide minimum 5 similar installations within last 3 years.

Project: _____ From: _____

To: _____ Date: _____

	Date of Installation	Project Name	Owner Info	GC Info	Architect info
1					
2					
3					
4					
5					
6					
7					
8					

End of Similar Installation List Form

SECTION 017300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Progress cleaning.
   3. Starting and adjusting.
   4. Protection of installed construction.
   5. Correction of the Work.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
   2. Division 1 Section "Submittal Procedures" for submitting surveys.
   3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Provide protection against weather, rain, wind, storms, frost and heat so as to maintain all work and materials free from injury or damage.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.

1.5 QUALITY ASSURANCE

A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. IOR's Inspection procedures.
   2. Warranties.
   3. Extra Materials.
   4. Final cleaning.
   5. DSA project closeout and Final Certification of Construction.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
   2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
   3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   5. Division 1 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
   6. Other Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 DEFINITIONS

A. IOR: Inspector of Record.

B. Inspection: IOR will inspect, not the Architect.

1.4 SUBMITTALS

A. Submit a copy of Title 24 Certificate of Acceptance forms submitted to enforcement agency.

1.5 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting IOR's inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. IOR's Inspection: Submit a written request for IOR's inspection for Substantial Completion. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after IOR's inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.6 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final IOR's inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
   2. Submit certified copy of Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. IOR's Inspection: Submit a written request for final IOR's inspection process for acceptance. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after IOR's inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use form attached.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date specified in General Conditions.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Include Table of Contents.
   3. Identify content with specification section number and title.
   4. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

5. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

1.9 EXTRA MATERIALS

A. Deliver to Owner's facility manager extra materials specified in each section.

B. Organize submitted materials in orderly sequence based on the table of contents of the Project Manual.
   1. Itemize each material and quantity in 8-1/2 by 11-inch paper.

C. Label each items for easy identification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting IOR's inspection for certification of Substantial Completion for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

3.2 DSA PROJECT CLOSEOUT AND FINAL CERTIFICATION OF CONSTRUCTION

A. Verified Reports: Per Title 24 Part1, Section 4-336.

B. Final Certificate of Construction: Per Title 24 Part1, Section 4-339.

C. Duties of Contractor: Per Title 24 Part1, Section 4-343.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
    1. Punch-List Form.

END OF SECTION 017700

PUNCH-LIST FORM

☐ Preliminary Punch-List.
☐ Final Punch-List.

Project:	From:
To:	Date:

Item No.	Room No.	Area	Description	Completion Date	A/E Verification

End of Punch-List Form

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Maintenance manuals for the care and maintenance of products, materials, and finishes.

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
   3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
   4. Other Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return 1 copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit 1 copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.

3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
   1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
   4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
   5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   3. Gas leak.
   4. Water leak.
   5. Power failure.
   6. Water outage.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions.
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard printed maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.

B. Related Sections include the following:
   1. Division 1 Section "Closeout Procedures" for general closeout procedures.
   2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Other Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit 1 set of marked-up Record Prints.

B. Record Specifications: Submit 1 copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit 1 copy of each Product Data submittal.
   1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Identification: As follows:
      a. Project name.
      b. Date.
      c. Designation "PROJECT RECORD DRAWINGS."
      d. Name of Architect.
      e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
   4. Assemble in single binder with table of contents.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Record Product Data Form.

END OF SECTION 017839

RECORD PRODUCT DATA FORM

Record Product Data is due no later than 10 calendar days after the date of Substantial Completion. Photocopy for continuation sheets. List products in order by specification section numbers.

Project Name:	From:
To:	Date:

Spec Section		**Originally Specified**		**Actually Installed**	
No.	**Title**	**Model**	**Manufacturer**	**Model**	**Manufacturer**

End of Record Product Data Form

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for requirements for preinstruction conferences.
   2. Other Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

A. Instruction Program: Submit 2 copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. At completion of training, submit 1 complete training manual(s) for Owner's use.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written performance-based test.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

DIVISION 2

SITE CONSTRUCTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Qualification Data: For demolition firm.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
   6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Storage or sale of removed items or materials on-site is not permitted.

B. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated. Patch and repair with similar materials.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts. Patch and repair with similar materials.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
1. Patch and repair with similar materials.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Division 1 Section "Construction Waste Management."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

DIVISION 3

CONCRETE

SECTION 031000

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Completion of subgrade preparation, formwork, ties, shoring, bracing, anchorage and blockouts as indicated on the Drawings and specified herein.

B. Related Sections:

1. Curbs, Gutters, Sidewalks and Driveways; refer to Section 321600.
2. Concrete Reinforcing; refer to Section 032000.
3. Cast-in-Place Concrete; refer to Section 033000.
4. Rough Carpentry; refer to Section 061000.

1.2 REFERENCED STANDARDS

A. Refer to Section 014219 for information concerning availability and use of references.

ACI 117-90 - Tolerances for Concrete Construction & Materials

ACI 347R-94 - Formwork for Concrete

ANSI/AHA A135.4 - Basic Hardboard

ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous types)

CRD-C-572-74 - Polyvinyl chloride Waterstops

DOC PS-1-95 - Construction and Industrial Plywood

WCLIB Std. No. 17. - Grading Rules for West Coast Lumber

WWPA - Western Lumber Grading Rules 2011 with Supplements

B. Conform to the requirements of Section 014523 – Testing and Inspection Services.

C. Construct and erect formwork in accordance with ACI 318 and 347, and Section 1905A of the California Building Code (CBC) 2019, Title 24, Part 2.

D. Design forms and falsework to adequately support live and dead loads, including equipment, concrete drops, pressures of foundations, etc.

E. Follow recommendations of ACI 318 and 347.

F. Title 24, Parts 1 and 2, California Building Code.

1.3 ARCHITECT'S REVIEW

A. Architect will review formwork for architectural suitability where exposed concrete finish occurs. Contractor shall be responsible for design of formwork for structural stability and sufficiency.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Earthen Forms: Provide earthen forms for footings only where the soil is firm and stable and the concrete will not be exposed, and subject to approval of the Division of the State Architect. Cut earthen forms square, neat and accurate to size. Clean bottoms of excavations.

B. Wood Forms: Provide wood forms**,** based on PS 1-09 Plywood or B-B Class I exterior, high density overlaid one side for forms, sound, undamaged, and clean, 5/8-inch thick minimum for exposed concrete work.

1. Lumber: Provide Douglas fir, construction grade lumber for framing, studding and bracing.

2. For site walls provide HDO or HDO 7 layer minimum grade B-B for all exposed walls.

C. Exposed Architectural Concrete: HDO or HDO B-B 7 Ply minimum for a smooth architectural finish. Seal all joints and edges.

2.2 COMPONENTS

A. Formed Construction Joints: Provide minimum 24 gage galvanized steel foam filled type, with release tape sealed slots, bent tab anchors, securable to formwork.

2.3 ACCESSORIES

A. Provide accessories and anchorages required, of sufficient strength, length and character to maintain formwork during pouring operations.

B. Use anchors and hangers which do not leave exposed metal at surface.

C. Use snap-off, removable, or adjustable type metal ties, hot-dip galvanized. Provide standard metal form clamp assembly, spreader type leaving no metal within 1 inch of concrete exposed face. Leave inner tie rod within concrete when forms are removed.

D. Provide colorless mineral oil type form coating, non-grain raising and non-staining type, Nox-Crete Company Nox-Crete Form Coating, or other approved equal.

E. Rigid foam plastic fillets may be used for chamfered corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to commencing work, inspect the work of others and verify that such work has been properly completed and installed to allow for proper installation of materials and methods required of this section.

B. Inspect forms in accordance with Title 24, Part 2, Section 1705A.3.5, California Building Code.

3.2 PREPARATION

A. Earthen Forms: Trench earthen forms at least two inches wider than footing widths shown on drawings. Construct wood edge strips at each side of trench at top to secure reinforcing and prevent trench from caving. Form sides of footings where earth caves. Tap form and clean debris and loose materials in earthen forms before depositing concrete.

B. Design of forms and shoring in excess of 3 feet in height, shall be by a California State registered Civil Engineer.

C. Verify accuracy of lines, levels, and centers.

D. All embedded items must be installed prior to placement of concrete - *NO EXCEPTIONS*.

3.3 APPLICATION

A. Construct formwork and appurtenances to meet design and code requirements. Construct of sound materials, of correct shape and dimensions, mortar tight, and of sufficient strength to prevent sagging, buckling, movement and failures. Provide adequate shores of wood or metal to safely carry imposed loads and adjustable to prevent displacements during the work.

B. Align joints and make them watertight.

C. Set reinforcing accurately and ensure secure placement.

D. Maintain tolerances of ACI 347, within 1/8-inch in 10 feet and ¼" maximum deviation from theoretical dimensions. Exposed concrete may require tighter specifications.

E. Assist in setting and placing blockouts and sleeves for materials and products to be embedded in and passing through concrete.

F. Set screeds and establish levels for tops of concrete for finish surfaces. Shape surfaces as indicated on drawings.

G. Screed supports for concrete over waterproof membranes or vapor barriers shall be of a cradle, pad, or base type which will not puncture membrane.

H. Wet formwork prior to placing concrete and keep wet during concrete curing process.

3.4 PROTECTION

A. Do not remove formwork, shoring and bracing until such time as masonry and concrete has gained sufficient strength to carry its own weight, and construction and design loads which are liable to be imposed upon.

1. Verify strengths by compressive strength test results. Loosen forms carefully. Do not wedge pry bars, hammers or other tools against masonry and concrete surfaces.

B. In addition to California Building Code Section 1905A, the following are minimum times for forms and shoring to remain in place prior to removal:

1. Footings and grade beams - 5 days.
2. Walls and columns - 14 days.
3. Beam sides - 10 days.
4. Beam and slab soffits - 28 days - Add temporary reshoring requirement.

END OF SECTION

SECTION 032000

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Completion of reinforcing steel bars, welded wire fabric, support chairs, bolsters, bar supports and spacers as indicated on the drawings and specified herein.

B. Related Sections:

1. Curbs, Gutters, Sidewalks and Driveways; refer to Section 321600.
2. Concrete Forming and Accessories; refer to Section 031000.
3. Cast-in-Place Concrete; refer to Section 033000.
4. Lightweight Structural Concrete; refer to Section 033116.
5. Concrete Unit Masonry; refer to Section 042200.

1.2 QUALITY ASSURANCE

A. Conform to the testing and inspection requirements of Section 014523 – Testing and Inspection Services.

B. Perform reinforcing work in strict conformance with Chapter 19A, Title 24, California Building Code (CBC) 2019, and CRSI, 2018, unless specified otherwise or required otherwise by local code jurisdiction.

1.3 REFERENCES STANDARDS

A. Refer to Section 014219 – Reference Standards for information concerning availability and use of references.

ACI SP-66(04) - Detailing Manual

ACI 318-14 - Building Code Requirements for Structural Concrete

ASTM A82 - Steel Wire, Plain, for Concrete Reinforcement

ASTM A185 - Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A497 - Steel Welded Wire Reinforcement, Deformed, for Concrete

ASTM A615 - Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A706 - Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

CRSI MSP, 29th Edition, 2018 - Manual of Standard Practice

AWS A5.1: 2012 - Specification for Carbon Steel Electrodes for Shielded Metal Arc

Welding

AWS A5.5: 2014 - Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding

AWS D1.4: 2018 - Structural Welding Code---Reinforcing Steel

B. In addition to CRSI specifications, follow ACI 315 and 318, AWS welding codes and qualifications, and ASTM A185, A615 and A706.

C. Testing of bars in accordance with Title 24, Section 1910A.2, Part 2.

1.4 TESTING

A. Comply with Title 24, Section 1910A.2

B. Where samples are taken from bundles as delivered from the mill, with the bundles identified as to heat number, and provided that the mill analysis accompany the report, then one tensile test and one bend test shall be made from a specimen from each 10 tons or fraction, of each size of reinforcing steel

C. Where positive identification of the heat number cannot be made or where random samples are to be taken, then one series of tests shall be made from each 2-1/2 tons or fraction, of each size of reinforcing steel.

D. Testing Laboratory shall perform chemical analysis of reinforcing for suitability for welding prior to welding. Welding reinforcing bars shall comply with ASTM A706.

1.5 SUBMITTALS

A. The Contractor shall be responsible for providing steel reinforcing as indicated on the Drawings for concrete reinforcing and as specified herein. Prepared Shop Drawings shall be reviewed by the Architect or Structural Engineer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Do not allow reinforcing materials to have direct contact with the ground. Cover materials adequately to prevent rusting, and contact with materials or construction injurious to proper bonding.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcing Bars: Deformed billet steel reinforcing bars, ASTM A615, plain finish (except ASTM A706 for welded bars where called for), see Drawings for grade.

1. When welding is required, provide reinforcing bars conforming to ASTM A706,

including the additional requirements of AWS D1.4, as modified by 2019 CBC Standard Chapter 19A.

2. Where called for, provide ASTM A706.

2.2 ACCESSORIES

A. Welded Wire Fabric: Provide plain type, ASTM A185, in coiled rolls, plain finished, void of rust, dust, scale, paint, grease and other coatings.

B. Provide minimum 16 gauge galvanized annealed tie wires, and chairs, bolsters, bar supports, and spacers sized and shaped for strength and support of reinforcing. Plastic accessories may be acceptable if approved by Architect prior to use.

2.3 FABRICATION

A. Fabricate in accordance with details shown.

B. Accurately bend, cut and place bars as shown on Drawings and in accordance with the requirements of Title 24, Part 2, Section 1905A and ACI 318. Bend bars cold; heating of bars is not permissible. Do not bend or straighten bars in any manner that will injure materials.

C. Welding: Reinforcing to be welded shall comply with the requirements of Title 24, Part 2, Section 1903A.8 and ACI 318. Perform welding, where shown or approved, by the direct electric arc process in accordance with AWS D1.4 using E90 series low hydrogen electrodes., except E80 for ASTM A706, GRW reinforcing. Preheat 6 inches each side of joint. Protect joints from drafts during cooling process; accelerated cooling is prohibited. Do not tack weld bars. Clean metal surfaces to be welded of all loose scale and foreign materials. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds found defective, with chisel, and replace with proper welding.

1. Employ only experienced certified welding operators.

2. Prequalification of welds are to be in accordance with code and carbon equivalent of reinforcing not exceeding 0.75.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to commencing work of this section, inspect work of others and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required of this section.

3.2 INSTALLATION

A. Fabricate reinforcing in accordance with ACI 315. Locate reinforcing splices not shown on drawings, at points of least stress. Where shown or required, weld reinforcing bars in accordance with AWS D1.4.

B. Place reinforcing supported and secured against displacement. Do not deviate from true alignment.

C. Ensure that reinforcing used is clean, free of scale, dirt, dust, rust and other matter.

D. Provide lap splices for bars noted as "cont.". Provide a Class “B” lap splice in concrete and 72 bar diameters in masonry. Wire all laps and splices in welded wire mesh and provide side and end laps of at least 6 inches.

1. Spacing - minimum center-to-center distance between parallel reinforcing bars is to be in compliance with that shown on drawings, or in the absence of such information on drawings, the clear spacing is to be one bar diameter, but in no case less than 1-1/2 inch, nor less than 1-1/3 times the maximum size of aggregate.

2. Where possible, stagger splices of adjacent vertical bars.

E. Only splice reinforcing where shown or noted. Splices at other locations must be approved by the Architect. Provide continuous reinforcement between splice locations in vertical walls. No splices of vertical wall reinforcing may occur except at foundations, unless specifically approved by Division of the State Architect, and the Architect.

1. Securely tie reinforcing with 16 gage tie wire at all splices and intersections, and as may be directed.

2. Point ends of wire ties away from forms.

F. Stagger splices in adjacent horizontal wall reinforcing bars a minimum of 4 feet.

G. Provide dowels in footings and/or grade beams the same size and number as vertical wall or column reinforcing. Provide a minimum dowel projection equal to Class “B” lap splices unless noted otherwise.

1. Securely tie dowels in place before depositing concrete. Install No. 3 bars for securing dowels where no other reinforcement is provided.

H. Provide the minimum coverage of reinforcing by concrete:

MINIMUM COVER:
Inches (mm)

1. Cast against and permanently exposed to earth…… 3 (76)

2. Concrete exposed to earth or weather:

No. 6 through No. 18 bar…… 2 (51)
No. 5 bar, W31 or D31 wire, and smaller……. 1-1/2 (38)

3. Concrete not exposed to weather or in contact with ground: Slab, walls, Joists:

No. 14 and No. 18 bar…… 1-1/2 (38)
No. 11 bar and smaller…….. 3/4 (19)

4. Beams & Columns:

Primary reinforcement, ties, stirrups, spirals……1-1/2 (38)

I. Reinforcing bars shall not be re-bent.

3.3 APPLICATION

A. Correction during concreting: Maintain capable steel workers during placement of concrete for properly resetting reinforcement displaced by runways, workers, or other causes.

B. Reinforcement: As a minimum for slab reinforcement, provide 6 x 6 W4.0 x W4.0 wire mesh ASTM A185, if no other reinforcement is indicated.

3.4 DEFECTIVE WORK

A. The following reinforcing work will be considered defective and may be ordered by Owner to be removed and replaced at no additional expense to Owner:

1. Bars with kinks or bends not shown on Drawings.
2. Bars injured due to bending or straightening.
3. Bars heated for bending.
4. Reinforcement not placed in accordance with Drawings or Specifications.
5. Rusty or oily reinforcement.

3.5 FIELD QUALITY CONTROL

A. Refer to Section 014523 - Testing and Inspection Services for requirements.

B. Prior to pouring concrete, notify all parties to the inspections, that reinforcing is ready for inspections. Secure approvals by testing laboratory and inspector before concrete operations commence.

3.6 CURING

A. Concrete (other than high-early-strength) shall be maintained above 50 degrees F. and in a moist condition for at least the first seven (7) days after placement, except when cured in accordance with Section 26.5.3.2 (a), ACI 318.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Completion of sand bed, vapor barrier, cast-in-place concrete, and finishes as indicated on the drawings and specified herein.

B. Related Sections:

1. Curbs, Gutters, Sidewalks and Driveways; refer to Section 321600.

2. Concrete Forming and Accessories; refer to Section 031000.

3. Formwork, Earthen forms: See Section 031000 Concrete Forming and Accessories.

4. Concrete Reinforcing: See Section 032000.

5. Miscellaneous steel, see Section 051200 Structural Steel Framing.

1.2 QUALITY ASSURANCE/SUBMITTALS

A. Conform with the requirements of Section 014523 - Testing and Inspection Services.

B. Perform concrete work in accordance with ACI 301 and 318, unless specified otherwise. Provide continuous inspection and testing for concrete placement in accordance with Sections 1705A.3 and 1905A Title 24, Part 2, California Building Code.

C. Sample Panels: When and where instructed to do so, provide on-site sample panel with specified finishes. Construct additional panels as may be necessary to gain approval of finishes desired. After rejection of panel, remove from site immediately. Approved and reviewed panel is to be left in place at site for project duration as a project standard.

D. Testing Laboratory Services:

1. Owner will employ and pay for an Independent Testing Laboratory to review the various concrete mixes required to produce concrete of the strengths required for the project. Submit and obtain approvals before proceeding with the work. Concrete mix shall be designed per Title 24, Part 2, Section 1905A1.15

2. Separately, Owner will employ and pay for a testing laboratory to perform tests and inspections, but the cost of subsequent and additional testing and inspections due to failed items will be backcharged to the Contractor.

E. Submit design mixes to Architect for Structural Engineer, and Testing Lab review and approval. Contractor shall pay for review of more than two (2) designs for each strength required.

F. Submit shrinkage test for each design minimum. Perform the following shrinkage tests for lightweight concrete, for each 150 cubic yards and fraction:

1. Specimens - 4-inch x 4-inch and 11 inch long bars, cured for seven (7) days in a moist room and as specified in ASTM C157. Make measurements at 7 day intervals until 35 days of curing has elapsed.

2. Allowable shrinkage of lightweight concrete used on project is not to exceed 0.05 percent after the 35 days of curing has elapsed.

1.3 REFERENCE STANDARDS

A. Refer to Section 014219 – Reference Standards for information concerning availability and use of references.

ACI 318 - Building Code Requirements for Structural Concrete and Commentary

ASTM C33 - Standard Specification for Concrete Aggregates

ASTM C94 - Standard Specification for Ready-Mixed Concrete

ASTM C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement

ASTM C156 - Standard Test Method for Water Loss [from a Mortar Specimen] through Liquid Membrane-Forming Curing Compounds for Concrete

ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete

ASTM C227 - Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)

B. All work under this section shall be in accordance with applicable provisions of CBC, 2019, Title 24, Part 2, Chapter 19A.

C. Refer to the following information for compliance of materials, products, and installation techniques: ASTM C33, C94, C150, C260, C494 and ACI 301, 304R-00 and 3051-14.

D. Handling and Placing: Concrete transported and placed as per ACI 318. Concrete shall be thoroughly compacted and worked into forms around reinforcing steel using suitable equipment. Vibrating of formwork will not be permitted.

E. Where conditions make placing difficult or reinforcing is congested, batches containing the same proportions of sand and cement used in the concrete plus a maximum of 50 percent of coarse aggregate shall be used.

F. Inspections: Notify the Architect, Structural Engineer, and the Division of the State Architect (DSA) at least forty-eight hours in advance of the first pour of concrete and sufficiently in advance of subsequent pours, see 1704A, Title 24, Part 2, California Building Code and chapter 7, section 7-145, Title 24, Part 1, California Administrative

Code.

G. Testing: The Inspector will take at least four cylinders of concrete from each day's run of 50 yards, or 2,000 sq. ft. of surface area for slabs, or fractional part thereof, per ACI 318. Field specimens of concrete taken and tested in accordance with 2019 CBC Standard. Label each cylinder with job name, date, number, result of slump test, and the point in the pour in the structure from which the sample was taken noted thereon. One cylinder shall be tested at seven days and two at 28 days. The fourth cylinder shall be stored for 56 days unless instructed otherwise. Core test to comply with ACI 318 if cylinder tests indicate deficiencies.

H. Embedded Items: Pipes and conduit in concrete, located, sized and if required, sleeved in accordance with the requirements of ACI 318. Bolts and anchorage devices embedded in concrete to fastened sills, tie-down columns and other structural and framing members to concrete installed and secured in place before concrete is placed.

1. Concrete shall be placed in a continuous operation between predetermined joint locations. Location of construction joints shall be as shown on the drawings or at locations approved by the Engineer and the Division of the State Architect.

2. Joints shall be straight, exactly horizontal or vertical and the surface of the concrete shall be level wherever a run is stopped. Reinforcement shall be extended through joints or dowels to develop the full strength of the reinforcement. Construction joints shall be per ACI 318.

1.4 TESTING

A. Provide free access to work. Provide laboratory design mix. No substitutions will be accepted. Cement and aggregates shall be tested.

B. Cement: Test Portland cement in accordance with Sections 1910A.1, Title 24, Part 2, and Section 26.4.1.1, ACI 318.

C. Core Tests: Take and test composite construction cores in accordance with Section 1910A.4, Title 24, Part 2

D. Batch Plant Inspection: Provide in accordance with Section 1705A.3.3, Title 24, Part 2.

E. Placing Record: Keep records of placing in accordance with Section 1705A.3.6, Title 24, Part 2.

F. Cylinder Test: Provide in accordance with Section 1905A.1.15, Title 24, Part 2.

G. Slump Test: Provide in accordance with ASTM C143 for each set of test cylinders.

H. Placing Inspection: Provide in accordance with ACI 318.

I. Moisture Testing: All slabs to receive flooring materials other than ceramic tile shall be calcium chloride dome tested at least 54 days after placement. Readings exceeding requirements of flooring manufacturer (generally 3 lbs. per 1,000 s.f. per 24 hours) will

require retesting prior to installation of flooring. Readings in excess of 5 lbs. per 1000 s,f, will require testing by Owner using petrographic analysis to determine water/cement ratio at time of placement.

1. All tests in areas where concrete was placed with a water/cement ratio in excess of .45 will be paid for by Owner, but may be back charged to Contractor.

J. Compaction Testing: Provide in accordance with ASTM D689.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cement: For site walls – Colton II - Provide ASTM C150 TYPE II/V conforming to requirements of 1903A.5, Title 24, Part 2. If aggregates contain reactive substances, reactive with cement alkalies they may not be used.

B. Aggregates:

1. Base and Aggregate base shall conform to the State of California, Department of Transportation (CALTRANS) Standard Specifications, Current Edition. All base, whether called out as aggregate base or base shall be in conformance with CALTRANS Section 26 for Class 2 Aggregate Base, 3/4-inch maximum. The maximum percentage of recycled material allowable shall not exceed 50% of the total volume of aggregate used.

2. Base and Aggregate Base shall be provided by a licensed commercial materials supplier. Certifications shall be submitted with each submittal. Use of on-site asphalt materials in aggregate base or base is strictly prohibited. The use of Crushed Miscellaneous Base is strictly prohibited.

3. Aggregates: ASTM C33, 1-inch maximum conforming to CBC 2019, Title 24, Part 2, 1903A.5 Aggregates and ACI 318.

C. Curing Materials:

1. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per square yard, complying with AASHTO M182, Class 2.

2. Moisture-Retaining Cover: One of the following, complying with ASTM C171:

a. Curing paper
b. Polyethylene film
c. Burlap Polyethylene-coated

3. Liquid Membrane-Forming Curing Compound: Liquid type non-wax membrane-forming curing compound complying with ASTM C309, Type I, Class B. Moisture loss not more than 0.055 gr./sq. cm. when applied at 200 sq. ft./gal/ product shall be compatible with finishes to be applied to concrete.

a. Products: Subject to compliance with requirements, provide one of the following:

"2000 Kure 1315"	BASF Building Systems.
"Kurez W Vox"	Euclid Chemical Co.
"Sealtight 1100-Clear"	W.R. Meadows, Inc.

b. Surface Treatment for Slabs Receiving Wood Flooring, Sheet Vinyl, or Resilient Flooring including Sheet vinyl and Vinyl Cementitious Tile, Carpet with a Vinyl, Rubber or Unitary Type Backing: Waterproof, Seal and Cure Application, CS 2000 by Creteseal (800) 278-4273, or equivalent, Floor Seal Technology, Inc. (800) 572-2344.

4. Warranty: 15 years Labor and Materials backed by a $1,000,000 Insurance Policy

a. A trained applicator shall apply CS 2000, or a technician must be on site during the spraying applications for verification to receive the 15 year warranty on floor coverings.

b. When a floor covering system is installed on a slab treated with the product according to manufacturer's instructions, the manufacturer shall warrant the floor covering system against delamination due to negative, ground originated moisture migration or moisture-born contaminates for a period of ten years from the date of original installation.

The warranty shall cover labor and materials necessary to repair or replace the floor covering system if repair cannot be made.

5. After pouring, placing, bullfloating, final finishing, soft cutting, and the surface of the concrete has hardened sufficiently to sustain foot traffic, CS 2000 Sealer shall be applied.

6. Apply CS 2000 Concrete Sealer at the rate of 200 square feet per gallon coverage. If puddling or bird bathing occurs, lightly broom product evenly over the substrate.

7. Continue brooming the product evenly over the substrate until the CS 2000 product has penetrated into the concrete.

8. Provide one of the following, or other approved equal:

Creteseal CS 2000.
Ashford Formula
Kure N Harden – By BASF

D. Water: Provide clean water free from injurious substances, per Section 26.4.1.3, ACI 318.

E. Vapor Barrier: Provide Stego Industries, 15-MIL Specifications, comply with ASTM E 1745, Class A, requirements.

F. Admixtures: *(No Calcium Chloride)* Admixtures to be used in concrete shall be subject to prior approval by the IOR and the Division of the State Architect, CBC 2019.

1. Water Reducing: Reduce water 5 percent minimum, increase 28 day compressive strength, decrease 21 day drying shrinkage, ASTM C494.

2. Provide one of the following, or other approved:

BASF The Chemical Co. Pozzolith 300 R.

3. Acceleration or Retarding: ASTM C494.

4. Air Entraining: 4 percent minimum, 6 percent maximum air content by volume, ASTM C260.

5. Admixtures shall be in accordance with Section 26.4.1.4 ACI 318.

6. Concrete Sealer: Dayton Superior “Cure & Seal 309 J18”, W.R. Meadows "VOCOMP®-25", or Sonneborn® Products "Kure-N-Seal W" as manufactured by BASF.

a. For site walls use Sinak HLQ 125.
b. 3000 psi concrete 3/8” – 1/2” aggregate.

7. Non-Slip Surface: Trowel finish aluminum oxide grains, at exterior stairs and where indicated on the Drawings.

8. Add shrinkage reducing agent, such as “Eclipse®” as manufactured by Grace Construction Products or Peramin® SRA as manufactured by Peramin.

2.2 COMPONENTS

A. Non-Shrink Grout: Premixed compound consisting of non metallic aggregate, cement, water reducing and plasticizing agents, capable of developing non-shrink characteristics in both the horizontal and vertical direction with minimum compressive strength of 4,800 p.s.i. in two (2) days, and 6,000 p.s.i. in twenty-eight (28) days.

1. Provide Embeco Grout as manufactured by BASF, or other approved by Five Star, Dayton Superior, or Sika.

B. Cement Grout and Drypack: Precision support grout shall be BASF Masterflow® 713 Grout as manufactured by Master Builders, Cleveland, Ohio consisting of a hydraulic cementitious system, specially graded and processed natural fine aggregate and additional technical components. Other products will only be acceptable providing written approval of the Engineer is obtained prior to bidding. Acceptance will be granted only upon satisfactory evidence proving that the substitute material meets the following

requirements, conforming to CRD C-621 Corps of Engineers.

1. Free of gas producing or releasing agents.

2. Free of oxidizing catalysts.

3. Free of inorganic accelerators, including chlorides.

4. Drypack: Pre-mixed grout shall be used. Use only enough water to make a stiff mix consistency. Pre-mixed grout shall be used under base plates per manufacturer's recommendations, and packed solid under pressure treated mudsills, per Structural Details, so as to obtain a continuous bearing. Minimum compressive strength of 6000psi.

C. Joint Materials: Provide tooled joints or plastic control joints.

1. Construction Joints: Provide metal keyed dividers for cold joints, subject to review and approval by Architect.

2. Expansion Joint Fillers:

a. 1/2-inch asphalt impregnated fiber conforming to ASTM D545 Type 5, where slab abutts wall or other vertical elements.

b. Where joint will be finished with sealant, set expansion strip with a 1/2-inch deep removable expansion strip cap.

D. Under Slab Vapor Barrier: 15 mil Stego Wrap, Fortifiber Building Systems, or W.R. Meadows, or equal, over 2” compacted sand. Refer to plans and Geotechnical Report for installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Certifications: Provide legible copies of the delivery tickets of each load of concrete with the following information:

1. Name and location of plant.
2. Serial number of ticket.
3. Date and truck number.
4. Name of contractor.
5. Name of project.
6. Type of class of concrete and how to be used.
7. Amount of concrete.
8. Time loaded, time of arriving and unloading at project site.
9. Water added at site and total water content.
10. Type, name and amount of admixtures.
11. Name and signature of person making slump tests.

12. Testing number of test cylinders.

3.2 PREPARATION FOR PLACEMENT

A. Remove foreign debris and matter which may have accumulated within forms, and close ports and openings left in formwork.

B. Thoroughly clean tools used in transportation, placing and consolidating concrete immediately after each pour.

C. Ensure that required inspections have taken place prior to pour.

3.3 APPLICATION

A. Mixes: The minimum concrete ultimate twenty-eight (28) day compressive strength to be per structural drawings and shall be controlled by the following method:

1. Designed Mix: Concrete mixes shall be based upon previously proven mixes and material tests made by a recognized testing agency. The design of such mixes shall be based on the ultimate strength of the concrete assumed in the design of the structure and shall take into consideration both the workability of the mix and the durability of the concrete. Refer to Sections 1903A and ACI 318.

2. When strengths in excess of 3,000 pounds per square inch are required, or special aggregates not having a record of satisfactory performance are used, or admixtures are used to reduce the cement content, ACI 318, shall be used to determine the mix.

3. Where design criteria in Title 24, Part 2, chapter 19A and ACI 318, provide for the use of a splitting tensile strength value of concrete as a modifier, laboratory tests shall be made in accordance with the CBC to establish the value of fct corresponding to the specified value of f'c.

4. Tensile-splitting tests of field concrete shall not be used as a basis for acceptance.

5. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement not less than 1 inch and not more than 4 inches.

6. The maximum water to cement ratio shall not exceed 0.5 (50%).

7. Project specific shrinkage test. Perform test using actual proposed mix with some aggregates used in the project. Limit 28-Day shrinkage to 0.045 percent.

B. Control Density Fill: Provide batch plant design mix of 4000 p.s.i., flowable concrete composed of 3000 lbs aggregate, 45 gals water, 50 lbs of cement and 400 lbs of flyash. Adjust proportions for materials as necessary and submit to Architect, for information.

3.4 CONVEYING

A. Handle concrete from mixer to location of placing as rapidly as practical, avoiding separation or loss of ingredients and rehandling. Use carts, wheelbarrows, concrete pumps, conveyors or buggies to deliver concrete to location of placement.

B. Do not permit a free fall of more than 4 feet when placing concrete.

C. Use elephant trunk spouts for placing concrete in vertical elements. Space so that concrete does not exceed 4 foot flow horizontally.

3.5 PLACEMENT

A. In general, place concrete in accordance with ACI 301, and in the presence of the inspecting personnel required.

B. Ensure that anchors, seats, plates, and other items to be cast into concrete are placed, held securely, and will not cause hardship in placing concrete.

C. Maintain records of poured concrete. Record date, location, quantity, air temperatures, and test samples taken.

D. Ensure that reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.

E. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.

F. Pour concrete continuously between predetermined construction, control and expansion joints. Pour in a checkerboard pattern, unless otherwise directed.

G. Excessive honeycomb and embedded debris is not acceptable.

H. Conform to ACI 305 1-14 when concreting in hot weather.

I. Install vapor barrier in widest widths possible, under interior slabs on grade. Place at center of 4 inches of sand (minimum of 2 inches of sand top and bottom) lapping joints at least 18 inches and sealing joints, taping pipe penetrations.

J. Screed slabs and concrete bases level to a tolerance of 1/8-inch in 10 feet. Vary slab thickness as required to maintain top of slab elevation as design. Maintain top of slab elevation within ± 3/8” of intended elevation. Continually survey top of concrete elevations during concrete pour.

K. Inspect concrete surfaces immediately upon removal of forms. Patch imperfections.

L. Modify or replace concrete not conforming to required lines, details, shapes and elevations. Do not patch, fill, touch-up, repair, or replace exposed architectural concrete except upon express direction of Architect.

M. Provide smooth rubbed finish on concrete surfaces to be left exposed such as concrete walls, columns, beams, and joists, except as otherwise indicated.

N. Beginning immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete. Moisture cure for seven (7) days minimum all interior slabs.

O. Drypack shall be packed solid under baseplates and thoroughly packed under pressure treated mudsills, per Structural Details, so as to obtain a continuous bearing.

3.6 CONSTRUCTION JOINTS

A. Provide construction joints in slabs in accordance with ACI 318.

1. For slabs-on-grade, place control joints at 15 feet maximum on center in each direction, unless shown otherwise on Drawings.

B. The surface of horizontal construction joints shall be cleaned and roughened by removing the entire surface and exposing clean aggregate solidly embedded in mortar matrix, in accordance with the following procedure:

The contact surface shall be thoroughly cleaned by chipping or sand-blasting the entire surface not earlier than 5 days after initial pour, or by an approved method that will assure equal bond, such as a thorough hose-washing of the surface not less than two or more than four hours after the concrete is placed (depending on setting time), wash water and chalk-like material being entirely cleaned from the surface.

In the event that the contact surface becomes coated with earth, sawdust, etc. after being cleaned, the entire surface so coated shall be re-cleaned.

A mix containing the same proportion of sand and cement used in the concrete, plus a maximum of 50 percent of the coarse aggregate, shall be placed on horizontal joints before proceeding with the regular specified mix. A delay at least until the concrete in columns and walls is no longer plastic must occur before casting or erecting beams, girders, or slabs supported thereon. Beams, girders, brackets, column capitals, and haunches shall be considered as part of the floor system, and shall be placed monolithically therewith.

3.7 FIELD QUALITY CONTROL

A. Testing: Comply with CBC, 2019, Title 24, Part 2, Section 1903A.

B. If compressive strength tests of cylinder specimens fail to show strengths assumed in design, take 4 inch diameter cores at representative locations throughout structure as designated by Inspector. Take cores in accordance with ASTM C42. The strength level of the concrete shall be considered satisfactory if the average strengths of the area or panel equals or exceed the specified strength at 28 days, with no individual strength test of such area or panel less than 5 percent below that specified. Concrete that does not meet or exceed these criteria shall be removed by the contractor and replaced with concrete that conforms to these criteria. Remove and replace defective concrete at no additional cost to Owner. Be financially responsible for repair and replacement of other

in-place materials affected by such removal and replacement.

Costs of taking core samples and performing tests required will be paid by Owner if tests prove satisfactory. If test fail to show required strengths, concrete contractor will be held financially responsible.

C. If the strength of the molded test cylinder falls below the minimum ultimate compressive strength assumed in the design, adjust the proportions of the mix for the remaining portion of the structure to give concrete of the assumed minimum strength.

D. Concrete will also be deemed defective which is not formed properly as indicated, is not true to intended alignment, is not plumb or level where so intended, is not true to intended grades, has sawdust or other debris embedded within it, or does not fully conform to other provisions of these specifications. As directed, remove and replace with concrete complying with these specifications.

3.8 CONCRETE FINISHES

A. Slab Levels: Surfaces shall finish true to 1/8-inch in 10 feet on a straight-edge and in direction with maximum high and low variance occurring in not less than 20 feet and with 1/16-inch maximum tolerance in one running foot. Particular care shall be taken to finish troweling around the edges of the slabs so finish surface edges shall be at same elevations as the rest of the top surface of the slab. Slabs shall be surveyed continuously during pour.

B. Concrete Sealer: Concrete floors not indicated in the schedule to receive other finish shall receive two coats of sealer specified this section. Concrete to receive sealer shall be cured with specified concrete sealer that functions also as cure. Use the same material for each application.

C. Steel Trowel Finish: Interior slabs shall receive a monolithic steel trowel finish. Surfaces shall be screeded, wood floated, and steel-troweled. Finish shall be a smooth, hard, dense, impervious surface, free of defects. Finishers shall work from knee boards laid flat upon the surface. Mechanical troweling machines may be used if the desired finish and level tolerances can be obtained by their use, but finishing shall be by hand troweling.

1. Slabs to receive tile, carpet or adhered finishes shall receive light/medium broom finish to create "tooth" for adhesive.

2. Unfinished exposed to view slabs in service closets, mechanical, electrical, stairs, ramps, and similar spaces shall receive a medium/heavy broom finish. See Section 32 16 00 for site flatwork.

D. Depressed slabs shall be finished by tamping slab with an open grid tamper, screeding with a straightedge and wood floating to a true and uniform surface, true to tolerance of 1/4-inches in 10 feet.

3.9 CONCRETE CURING AND PROTECTION

A. General: At slabs that do not receive concrete sealer, per 2.01D, provide the following: Concrete Curing per Section 26.5.3, ACI 318. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Concrete shall be maintained above 50 degrees and continuously moist for not less than 7 days.

Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

B. Slab Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover during, and by combinations thereof, as herein specified. Provide Moisture-Curing by the following Methods:

1. Keep concrete surface continuously wet by covering with water. Continuous water-fog spray, for seven (7) days minimum.

2. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof type of adhesive. Immediately repair holes or tears during curing period using cover material and waterproof tape, for seven (7) days minimum.

3. Provide Curing and Sealing Compound to exterior slabs, walks, and curbs, as follows:

a. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Re-coat areas subjected to heavy rainfall within 3 hours after initial application.

b. Maintain continuity of coating and repair damage during curing period.

c. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, such as liquid floor hardener, waterproofing, damp proofing, membrane roofing, ceramic or quarry tile, vinyl composition tile (VCT), glue-down carpet, painting, and other coatings and finish materials, unless otherwise acceptable to Architect.

d. Cure formed concrete surfaces, including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

4. Curing Unformed Surfaces:

a. Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of moisture curing method.

b. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

5. Sealer and Dustproofer: Apply two (2) coats of specified curing and sealing compound to Interior slab surfaces not receiving any other finish.

6. Concrete (other than high-early-strength) shall be maintained above 50 degrees F. and in a moist condition for at least the first seven (7) days after placement, except when cured in accordance with Section 26.5.3, ACI 318.

3.10 PROTECTION

A. Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Exposed Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

1. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

2. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

3. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.

C. Concrete Surface Repairs: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly

higher than surrounding surface.

D. Repair of Formed Surfaces:

1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

2. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

E. Repair of Unformed Surfaces:

1. Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.

2. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01-inch wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

3. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

4. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect.

5. Site walls: Remove cracked, honeycombed or defective concrete as required by the Architect from joint to joint. Patching, calking, filling or repairing will not be permitted.

F. Repair Defective Areas:

1. Repair defective areas, except random cracks and single holes not exceeding 1 inch diameter, by cutting-out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance around.

2. Dampen concrete surfaces in contact with patching concrete and apply bonding

compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

3. Repair isolated random cracks and single holes not over 1 inch in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

4. Site walls: Remove cracked, honeycombed or defective concrete as required by the Architect from joint to joint. Patching, calking, filling or repairing will not be permitted

5. Perform structural repairs with prior approval of Architect of Structural Engineer for method and procedure, using specified epoxy adhesive and pressure grouting.

6. Repair method not specified above may be used, subject to acceptance of Architect.

G. Mitigation of Unacceptable High Moisture Emission Levels: Interior slabs-on-grade tested at levels in excess of 5.0 lbs/1000 s.f. shall be further evaluated with additional calcium chloride tests. Once levels are established, additional preparation measures shall be employed (depending on the magnitude of moisture levels) using one or both of the following products:

2 coats of Super-Krete
2 coats of Rust-Oleum 6000 system.

END OF SECTION

DIVISION 5

METALS

SECTION 051200

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Furnish and Installation of structural framing members, complete in place with required bracing, weld washers, nuts, shims, anchor bolts, and baseplates as indicated on the Drawings and specified herein.

B. Related Sections: Metal Fabrications; refer to Section 055000.

1.2 REFERENCE STANDARDS

A. Refer to the following for information regarding materials and installation methods necessary:

1. California Building Code (CBC) 2019, Chapters 22A and 35, as adopted by Title 24, and Chapter 7, Section 704 Fire-Resistance Ratings of Structural Members.

a. Refer to Drawings for details, design numbers, and ratings.

2. On-Site Welding Requirements, Sections 2204A, 1704A and 1705A, Title 24, Part 2, California Building Code, 2019.

3. American Society for Testing and Materials: Specifications A36, A123, A307, A370, A500, A501, A572 and A992.

4. American Institute of Steel Construction (AISC).

5. American Welding Society: AWS D1.1 and AWS D1.4

6. Steel Structures Painting Council (SSPC).

1.3 SUBMITTALS

A. Submit Shop and Erection Drawings Prior to Fabrication: Prepare erection drawings by State registered Structural Engineer. Show welded connections, lengths of welds, profiles, sizes, spacing and locations of members, attachments, anchorages, framed openings, size and type of fasteners, cambers and live loads. Contractor shall be responsible for reviewing and verifying all dimensions on shop Drawings.

1. Splices and Deviations: Splices will be permitted only where and as shown on Drawings. Deviations from design drawings desired or required by fabricator are to be indicated on shop drawings by providing a heavy line around the feature on which deviation approval is being requested, showing complete detail and

describing deviation proposed. Provide detail with a note specifically requesting approval of deviation by fabricator. Deviations or changes shall not be made without the approval of the Division of the State Architect, as a Change Order.

a. Refer to Section 013300 – Submittal Procedures, Paragraph 3.4 A.2. (Revisions) Cost of such changes shall be borne by the Contractor.

B. Erection and Bracing Plan and Procedure: Refer to Section 2205A, Title 24, Part 2, California Building Code. Employ a California State licensed Structural Engineer to prepare erection and bracing plan and erection procedure for structural steel including columns, beams, and girders, who will be responsible for compliance. Follow plan and procedure exactly. Maintain a copy at project site. Pay for costs involved.

C. Scrap collection and recycling plan: Contractor shall prepare and submit a scrap collection and recycling plan for all miscellaneous and structural steel.

1.4 QUALITY ASSURANCE

A. Tests and Inspections: Testing for steel shall be done in accordance with Title 24, Part 2, Section 1705A.2. Inspection shall be in accordance with Title 24, Part 2, Section Table 1705A.2.1.

B. If structural steel can be identified by heat or melt numbers and is accompanied by mill analysis and test reports (identified stock shall not be tested), testing shall be in accordance with Title 24, Part 2, Section 2203A.1

C. If structural steel cannot be identified or its source is questionable, make not less than one tension and one bend test for each 5 tons or fraction thereof. Also, it shall be tested to meet minimum chemical and mechanical requirements of the ASTM standard appropriate for the steel specified for the structure.

D. Furnish test specimens from steel fabricator and take them under the direction of the Testing Agency. Machine each test specimen by Testing Agency to dimensions required by ASTM A370.

E. Have testing agency pick up test specimens and make required tests.

F. Costs of tests of identified stock will be paid for by Owner, unless tests fail to comply with the specifications, in which case the Owner will pay for testing, but back charge the Contractor. Costs of tests for unidentified stock will be paid for by the contractor.

G. Complete a 4-sided inspection of steel. Such inspection shall be paid for by the Owner. The Inspector of structural steel which is not fabricated within 25 miles of the project site, shall also be paid for by the Owner, but the Contractor shall pay for travel expenses.

H. After fabrication and inspection, costs associated with re-inspection of defective or replaced materials shall be paid for by the Owner, but backcharged to the Contractor.

I. Provide labor, equipment and facilities necessary for moving and handling materials to be inspected.

J. Provide and pay for supervision by a registered Inspector of welding operations of frames with joints, including inspection for quality, penetration, and conformity of Drawings, and a report verifying that welding is adequate and was done in conformity of project requirements.

1. Visually inspect welds, and have inspector present to approve welding and high strength bolting whether performed in fabricator's shop or at project site, and inspect erection. Ensure testing laboratory compliance with regulations of the Division of the State Architect and certify in writing, upon completion of work, that welding and high strength bolting has been performed in accordance with Drawings and these Specifications. Inspect grouting of column base plates.

2. ~~Have testing laboratory check bolt tightness on not less than 10 percent of bolts selected at random in each high strength bolt connection. Follow procedures of ASTM A325 and A490.~~

3. Inspect all complete penetration welds and partial penetration welds by ultrasonic or other approved nondestructive tests. Inspect first pass of multi-pass welds and groove welds.

4. Perform ultrasonic testing by specially trained, qualified technicians who operate equipment, examine welds and maintain a record of welds examined, defects found and disposition of each defect. Repair defective welds and retest.

5. Ultrasonically test welds at rate of 100 percent to establish welder qualifications. If rejectable defect rate is less than 5 percent, frequency may be reduced to 25 percent. If rate increases above 5 percent, continue 100 percent testing until rejectable defect rate again drops below 5 percent. Calculate percentages by individual welder.

6. Submit all preliminary, working and final documents required by subsection 1.04K.

7. Inspect all seam welds at HSS steel member.

K. Comply with California Building Code (CBC) Title 24, Part 2, Sections 2213A and 1705A.2.

L. Results of tests, together with identified copies of the Mill Analysis and inspection reports shall be submitted to the Division of the State Architect, and to the Architect and Structural Engineer. Arrange for continuous inspection of Shop and field welding in accordance with Title 24, Part 2 Section 1705A.2.2.1 and Table 1705A.2.

1.5 PROJECT CONDITIONS

A. Verify measurements, lines, grades, locations and details at project site. Conform to existing field conditions.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. Structural Steel Members: Shall conform to the requirements of ASTM A6, add the following sentence "and shall be fabricated according to AISC Practice and Specifications for Building."

B. Structural plates, bars, etc., shall conform to ASTM A36 and ASTM A572. Structural wide flange beams and columns shall conform to ASTM A992, Grade 50.

C. Pipe columns shall conform to ASTM A53, Grade B

D. Tube members shall conform to ASTM A500, Grade B.

E. All welding shall be done using the shielded electric arc process by AWS certified welders using AWS A5.1, E70XX electrodes.

F. All welds used in primary members and connections in the lateral force systems shall be made with a filler metal that has a minimum Charpy V-notch toughness of 20 ft.-lbs. at minus 20 degrees F., as determined by AWS classification.

G. Continuous inspection is required for all field and shop welding by an Inspector approved by the Division of the State Architect.

H. Bolts shall conform to ASTM A307, unless noted otherwise.

I. Structural Steel Shop Drawings shall be reviewed by the Structural Engineer prior to fabrication.

J. Light gauge steel members shall conform to ASTM A653, Grade A.

K. Recycled Content – Provide products with an average recycled content of steel so postconsumer recycled content plus one-half of postconsumer content is not less than 50%

2.2 LIGHT STRUCTURAL STEEL

A. Standard specifications for Hot-Formed Welded and seamless Carbon Steel Structural Tubing, ASTM A500 Grade B.

2.3 WELDING ELECTRODES

A. Conform to AWS, D1.1/D1.1M-15.

1. Required strength of weld shall comply with CBC Title 24, Part 2, Sections 2212A.2.3 and 2213A.

2.4 GALVANIZING

Galvanize all structural steel exposed to weather, unless otherwise noted on plans.

A. Provide hot-dip galvanizing in accordance with ASTM A123, Grade 90.

B. Field Galvanizing: Provide ZRC, or other approved.

2.5 PRIMER

A. Exterior Primer - Provide Tnemec Series 10, a zinc-chromate, or other approved. Primer shall have a VOC content of 100 g/l (0.83 lb/gal) or less when calculated according to 40 CRF 59, Subpart D (EPA method 24).

B. Interior Primer – Provide interior primer 734149X red oxide by Rodda Paint Co., or equal. Primer shall have a VOC content of 100 g/l (0.83 lb/gal) or less when calculated according to 40 CRF 59, Subpart D (EPA method 24).

C. Clean, prepare and shop prime exterior members in accordance with SSPC-Paint 20 or SSPC-Paint 29 and compatible with top coats indicated on plans. Do not prime specific surfaces to be welded or which will be in direct contact with concrete or other cementitious materials.

D. Clean, prepare and shop prime interior members in accordance with SSPC-Paint 23 and compatible with top coats indicated on plans. Do not prime specific surfaces to be welded or which will be in direct contact with concrete or other cementitious materials.

2.6 WELDED STUDS

A. All welded studs shall be Nelson shear connector studs (ICC ESR-2856) or equal.

B. See Drawings for welded stud locations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Surface Conditions: Prior to commencing work of this section, inspect the work of others and verify that such work has been properly completed and installed to allow for proper installation of materials and methods required of this section.

3.2 FABRICATION AND ERECTION

A. Fabricate and assemble work by skilled workers using sizes and weights shown. Connections are to develop at least strengths shown, unless approved otherwise beforehand. Allow no splices except where shown.

1. Ultrasonic material inspection - ultrasonically test column materials thicker that

1-1/2 inch for laminations within 1 foot (6 inches either side) of a direct groove weld from girder flange connections and column splices.

B. Drilling, Punching and Reaming: Hole burning to make or enlarge previous holes is not allowed. Prepare required holes in structural steel members for attachment or passage of work of other trades. Where allowed, steel may be punched 1/16-inch larger than the nominal diameter of the bolt when thickness of the steel is equal to or less than the diameter of the bolt plus 1/8-inch. Where the steel is thicker than the diameter of the bolt plus 1/8-inch, the holes must be drilled or sub-punched and reamed. Diameter of the sub-punched holes, and the drill for sub-drilled holes, is to be 1/16-inch smaller than the nominal diameter of bolt to be installed. Precisely locate finished holes to ensure passage of bolts through steel assemblies without drifting. Enlarge holes only by reaming. Poor matching of holes is cause for rejection of work.

C. Welding: Comply with the requirements of Title 24, Part 2, Sections 1705A.2 and 2204A.1. Perform welding by the electric shielded arc process. Cut out defective welds with a chisel. Clamp or hold materials securely in position for welding. Upon completion, remove slag and clean welds for inspections and painting. Groove and multi-pass welds are required to be continuously inspected.

1. Storage and Care of Electrodes: Ensure that coatings of low hydrogen type electrodes are thoroughly dry when used. Use electrodes taken from hermetically sealed packages within four hours of the time the package is opened. Electrodes not used within this time period, and electrodes which have been exposed more than one hour to air having a relative humidity of 75 percent or greater, are to be dried for at least two (2) hours at 200 to 250 degrees F. before used, or are to be reconditioned according to manufacturer's printed recommendations. Electrodes dried or reconditioned, which are not used within four hours after drying is completed, are to be re-dried before use. Electrodes of any classifications that have been wet are not to be used under any conditions.

2. Preparation: Clean surfaces to be welded of paint, grease, scale, and foreign matter. Clean welds each time electrode is changed. Chip entire area of hand guided and controlled flame cut edges before welds are deposited. In general, surfaces made by automatic or mechanically guided and controlled equipment need not be ground or chipped before welded.

3. Procedures: During assembling and welding, hold components of a built-up member with sufficient clamps or other adequate means to keep parts straight and in close contact. Do no welding in wind until adequate protective screening has been set up.

4. Characteristics of Welds: After being deposited, brush welds and ensure they exhibit uniform section, smoothness of weld metal, feather edges without undercuts or overlays, and freedom from porosity and clinkers. Ensure through visual inspection at edges and ends of fillet welds there is good fusion and penetration into base metal.

D. Bolting:

1. Common Bolts: Make connections with common bolts only where indicated.

2. ~~High Strength Steel Bolting: Where structural joints are made using high strength bolts, load indicator washers, and nuts tightened to a high tension, the materials, method of installation and tension control, types of wrenches to be used, and inspection methods are to conform to specifications for structural jointing using ASTM A325 or A490 bolts established by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation and the following requirements:~~

   a. ~~Provide high strength bolts with a suitable identifying mark placed on top of the head before leaving factory.~~

   b. ~~Do tightening of nuts with properly calibrated wrenches, load indicator washers, or turn of nut method; the minimum bolt tension for the size of bolt used is to be in accordance with tables listed in the above standards.~~

   c. ~~Check calibrated wrenches individually for accuracy at least twice daily for actual conditions of application.~~

   d. ~~Mark bolts that have been completely tightened with identifying symbol.~~

   e. ~~Install load indicator washers in accordance with AISC specifications and Contract Drawings.~~

   f. ~~Ensure that contact bearing surfaces and threads of bolted parts are free of scale, slag, and burrs which could prevent solid seating of parts.~~

   g. ~~Bolt lengths are to be grip plus 1-1/4 inch.~~

   h. ~~At moment connections perform welding prior to high-strength bolt tightening~~.

3. Load Indicator Washers: Provide as manufactured/ licensed by Cooper and Turner. They may be used for field installation of high-strength bolts. These washers may not be substituted for any required washer, but may be used in conjunction with required washers. Tightening is to be in accordance with these specifications using high strength bolts. After sufficient bolts in a joint are snugged to draw the members into close contact, tightening should progress from the most rigid part to the free edges until the load indicators on bolts are closed to the required gap of 0.015 inches under bolt heads or 0.010 inches under the nuts. To prevent overtightening and damage to the bolts, do not completely close the gap.

4. Tension Set Bolts, Nuts, and Washers: May be used for field installation of high strength bolts. In multi-bolt joints, tighten nuts in stages, a little at a time, without breaking the spline in any one of them until the final stage, to minimize

slackening of the installed bolts.

5. Inspection of high strength bolting shall comply with Title 24, Part 2, Sections 2213A.1 and 1705A.2.

6. Erector to touch-up all welds and bolts after inspection.

E. Erection:

1. Erect structural steel by professional riggers, using proper hoists and equipment, carefully planned and laid out so that cutting shall not be necessary. Erect the work plumb, square and true to line. Provide temporary bracing and guys where necessary to provide for loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation, and leave in place as long as necessary to safeguard parts of the work.

2. Temporary Connections: Securely bolt work to maintain the steel in proper position while bolting and welding is being performed. Align, plumb and level work prior to welding and final bolting.

3. Set column base plates in exact position as to alignment, level and elevation and support on steel wedges or equivalent until grout has properly set. Center of each base is to be true to the column center within 1/16-inch and adjusted to its elevation to 1/32-inch. Exactly level plates on both axes.

4. Sequence: Carry out the erection of steel in the proper sequence with the work of others. Frame, bed and anchor to concrete and related work in accordance with detailed drawings and setting diagrams.

5. Erection Tolerance: Follow AISC except as follows:

   a. Vertical dimensions measured from top of beams at their connections at any one column, not varying more than 1/4-inch plus or minus per story or, when accumulative from floor to floor, not exceeding 3/8-inch per story exclusive of column shortening due to dead load.

   b. Floor level is considered level if floor framing members on any one floor measured from top of column connections do not vary by more than 1-1/2 inch plus or minus.

   c. Plumb displacement center line of columns from established column line, no more than 1 inch toward or away from established center line.

   d. Horizontal dimension variances governed by column displacement.

6. Perform erection with suitable equipment, of adequate capacity and design with due regard for personnel and public safety and as not to deflect or stress members

beyond reasonable limits. Maintain erection and temporary bracing plan at project site in accordance with Title 8, California Code of Regulations.

7. Damaged members during erection: Straighten or replace members which are bent, twisted or damaged as directed. If heating is required in straightening, perform heating by methods which ensure uniform temperatures throughout entire member. When directed, remove members which are damaged to an extent impairing their appearance, strength or serviceability and replace with new members at no additional cost to Owner.

8. Anchor Bolts: Provide with setting drawings and instructions. Verify position of bolts prior to delivery of steel; report errors or deviations for adjustment.

F. Erection Bracing: Provide erection bracing immediately upon erection of members and leave in place until members are braced by balance of building.

3.3 PROTECTION

A. Protection of Floors and Temporary Flooring:

1. Exercise caution to protect floor surfaces and adjacent work from damages. Do not overload floors. Provide only pneumatic mobile equipment with tires, for moving steel. Do not place steel members directly on concrete floors. Pads, timbers, or other materials for cushioning shall be used.

2. Provide necessary planking, scaffolding and temporary flooring in connection with erection of steel or support of erection machinery as part of the work. Conform use of temporary floors or steel deck to governing codes and regulations.

3. Temporarily tack weld steel deck to supports where used as a working platform. Distribute concentrated loads from welding machines or other heavy machinery by planking or other equivalent means. Replace steel deck damaged in using as working platform at no additional cost to Owner.

3.4 CLEANING

A. Shop Priming:

1. Clean surfaces according to SSPC and AISC recommendations, and apply specified primer to minimum 1.0 dry mil thickness. Ensure that primer is worked into joints.

2. Steel to be embedded into cementitious materials, permanently concealed steel surfaces, contact surfaces of high-strength bolted connections, and surfaces to receive fireproofing are not to be primed.

END OF SECTION

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   2. Miscellaneous framing supports.
   3. Miscellaneous steel trim.

B. Related Sections include the following:
   1. Division 9 Section “Painting” for field painting.

1.3 DEFINITIONS

A. Exterior: Defined as the following:
   1. Areas, locations, and surfaces that are unprotected, or exposed to environmental elements.
   2. Areas, locations and surfaces within uncontrolled environments.
   3. Areas, locations and surfaces of unconditioned spaces, including belowgrade/underground, partially-exposed, or “covered” parking areas.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.5 SUBMITTALS

A. Product Data: For items specified.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.

1.6 QUALITY ASSURANCE

A. Treads, Risers, and Nosings: CBC Section 11B-504.
   1. Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast.
   2. The stripe providing clear visual contrast shall be a minimum of 2” wide to a maximum of 4” wide placed parallel to, and not more than 1” from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.
   3. The radius of curvature at the leading edge of the tread shall be no greater than ½”. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. The maximum angle for a riser to slope under the tread shall be 30 degrees from vertical. Nosings shall extend 1-1/4" maximum over the tread below.
   4. Treads shall be 11” deep minimum. Risers shall be 7” high maximum and 4” high minimum. All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Open risers are not permitted.

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal fabrications that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Provide products with average recycled content of steel products such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

D. Steel Tubing: ASTM A 500, cold-formed steel tubing.

E. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

F. Slotted Channel Framing: Cold-formed metal channels with continuous slot complying with MFMA-3.
   1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated.
   2. Material: Galvanized steel complying with ASTM A 653, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36.
   1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.
   1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Surface Preparation: SSPC-SP2 Hand Tool Clean and /or SSPC-SP3 Power Tool Clean.

D. Organic Zinc-Rich Primer: Complying with SSPC-Paint 20 and compatible with topcoat, and meets AISC slip coefficient as a Class B Coating.
   1. Surface Preparation: SSPC-SP6 Commercial Blast Clean.
   2. Products:
      a. Tnemec Company, Inc.; Tneme-Zinc 90-97, 2.5 to 3.5 mils DFT (Basis of Design)
      b. Other manufacturers listed in Division 9 Section "High Performance Coatings".
      c. Or equal.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
   1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as indicated. Drill bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Galvanize miscellaneous framing and supports where indicated.

E. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.8 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

C. Field painted exterior miscellaneous steel trim and interior miscellaneous steel trim, where indicated.

2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

D. Field Finish: Comply with Division 9 Section “Painting” for field painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for sectional doors securely to and rigidly brace from building structure.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

DIVISION 6
WOOD AND PLASTICS

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Wood framing, miscellaneous furring for wall finishes, miscellaneous blocking and rough hardware.

B. Related Sections:

1. Finish Hardware, see Section 087100 – Door Hardware.
2. Millwork and other finish carpentry.

1.2 REFERENCE STANDARDS

A. Softwood Lumber: PS 20 - American Softwood Lumber Standard.

B. NFPA - National Forest Products Association, National Design Specifications for Stress Grade Lumber and its Fastening.

C. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

D. Chapter 23, Part 2, Section 2303, Title 24, California Building Code, 2019.

E. Chapters 7, 23 and 35, California Building Code, 2019.

F. Plywood: U.S. Product Standard PS 1-09.

G. Lumber: U.S. Product Standard, PS 20-10.

1.3 QUALITY ASSURANCE

A. Provide lumber with visible grade stamp of an approved agency certified by NFPA.

1.4 DELIVERY, STORING AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up, off ground surface.

B. Identify framing lumber by grades and store grades separately from each other.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading lumber to prevent damages, splitting and breaking.

E. Seasoning:

F. Deliver materials at earliest date possible to allow maximum; drying time on site.

G. Pile and strip lumber at site to allow free circulation of air with pile protected from sun and moisture.

H. Air-season lumber for at least 60 days before covering with finish materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber: PS 20 and WCLIB Standard Number 17; Douglas Fir/Larch; graded in accordance with NFPA Grading Rules; maximum moisture content of 19 percent, grades as scheduled on drawings.

1. Douglas fir shall bear WCLIB grade stamp.

2. Pressure treated Douglas fir shall be No. 2 minimum and bear the AWPA quality mark. Cuts and holes shall be treated per AWPA Standard U1 (statements such as "or to refusal" are not permitted).

3. Comply with provisions of Title 24, CBC, 2019, Part 2, Section 2303.

B. Plywood:

1. Plywood for Roofs, Walls, and Floor Sheathing: PS 1-09 Structural I grade, APA C-D, exterior glue, except B-D for electrical and telephone panels.

2. Comply with CBC, 2019, Section 2303.

3. Roof and shearwall plywood shall be nominally 4 ft. x 8ft. in size. Do not use sheets less than 8 square feet, nor less than dimensions noted in paragraph 3.08 Plywood Placement.

2.2 ACCESSORY MATERIALS

A. Nails, Spikes, and Staples: Common (with standard lengths), except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Steel Hardware and Stock Framing Products by Connectors: ASTM A36 steel, galvanized for exterior applications, Simpson Strong-Tie Company. Products by KC Metal Products, or other approved manufacturer, may be substituted if equal. Comply with CBC, 2019, Title 24, Part 2, Chapter 23.

C. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

D. Wood Preservative: Wolmanizing treatment at least two weeks prior to delivery to site. Treatment shall meet or exceed AWPA P5.

E. Machine Bolts: ASTM A307.

F. Pressure Treatment: Sills and plates in contact with concrete or masonry within 48 inches of the ground, and wood posts and columns bearing directly on concrete shall be water-borne preservative pressure treated in accordance with paragraph, CBC 2019, Title 24, Part 2, Chapter 23.

1. At cuts, holes, notches and other field operations which expose a surface not factory treated with preservative, field apply preservative material compatible with original material shall bear mark AWPA Standard U1.

2. Meet local Air Quality Control Board Standards for field applied preservative treatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Selection of Lumber: Carefully select members. Ensure that exposed members are free of heart center. Select members so that knots and obvious defects will not interfere with placement of bolts, proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

B. Cut out and discard defects which will render a piece unable to serve its intended function. Lumber may be rejected by Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.

3.2 GENERAL FRAMING

A. In addition to framing operations normal to fabrication and erection indicated on drawings, install wood backing required for work of other trades, and for casework, chalkboards, toilet partitions and etc. as required. Wood backing to be installed in high traffic and high impact areas.

B. Set horizontal and sloped members with crown up.

C. Non-bearing stud walls, sills, and trimmers may be anchored to concrete per Structural Drawings.

D. Wall and partition studs and mullions shall be continuous from sill to plates. Run at least two studs on each side of openings in stud walls for openings in exterior walls and in partition openings larger than 5 feet, and partitions from sill to plate. In addition, place one stud trimmer to support each end of lintels over openings, unless shown otherwise.

E. Provide double plates with joints staggered and lapping at least four feet, and splice. Nail as required on Drawings.

F. Install nailing blocks and backing necessary for attachment of grounds, finishes, trim, fixtures, and do required cutting, furring, and backing for plumbing and heating pipes, fixtures, etc., as detailed in the Drawings or approved by the Structural Engineer and approved by the Division of the State Architect, Office of Regulations Services.

G. Frame stud partitions, furring and walls containing fire extinguisher cabinets, electric panels, plumbing, heating, or other pipes to give proper clearance. Cutting of studs in bearing partitions and shear walls is prohibited unless specifically detailed.

H. Do not place pipes exceeding 1/3 of plate width in partitions used as bearing or plywood-sheathed walls, but place them in furring completely clear of studs, unless detailed otherwise. Place approved piping in center of plates using neat hole. No notching is allowed. In no case allow pipes to pass through plates less than 5-1/2 inches wide.

I. Unless otherwise indicated provide 2 inch by 6 inch studs at 16-inches on centers. Refer to Structural Drawings for Simpson Metal Strap Ties, strap length, nail size and nail spacing where plates are broken.

J. Provide cross-bridging at 10 feet on centers maximum for all joists and rafters more than 10-inches deep. Use wood 2 inch by full depth of joist or rafter or approved metal type bridging. Nail metal bridging.

K. Provide isolated posts with connections at top and bottom; Simpson CC caps or CB base unless specifically detailed otherwise.

L. Double joists under parallel partitions with solid blocking between joists over points of support.

M. Provide a Simpson "CB" Steel Base Plate for untreated wood posts where they are or will be in contact with concrete.

N. Framing for horizontal plaster assemblies shall comply with the requirements of CBC 2019, Title 24, Part 2, Section 2507.

3.3 FIRE BLOCKING

A. Fire blocking shall conform with the requirements of CBC 2019, Title 24, Part 2, Chapter 7, Section 713.

B. Ensure that no fire stop is less than nominal 2 inches thick and no less in width than enclosed space within partition.

C. Provide stud wall and partitions with continuous rows of bridging or fire stops which will form a complete and effective separation in entire width of partitions, placed in such a manner that there will be no concealed air spaces greater than 8 feet in vertical dimension. Intermediate stops may be in line with opening headers. Provide furred space between stud walls and partitions with continuous fire stops at same elevation as those in the enclosing walls which must be installed horizontally, thus forming a solid stop from outside to outside of studs. At concealed draft passages or shafts including furring

spaces, ensure that maximum dimension is no more than 8 feet. Provide fire stop partitions at suspended ceilings.

3.4 BEARINGS

A. Make bearings full unless shown otherwise.

B. Finish bearing surfaces on which structural members are to rest so as to give sure and even support. Where framing members slope, cut or notch ends as required to give uniform bearing surface.

3.5 SHIMMING

A. Do not shim framing member except where specifically shown or required by drawings.

3.6 BLOCKING

A. Install blocking required to support items of finish and to cut off concealed draft openings, both vertical and horizontal, between ceiling and floor.

3.7 ALIGNMENT

A. On framing members to receive a finished surface, align finish sub-surface to vary not more than 1/8-inch from plane of surface of adjacent framing and furring members.

3.8 PLYWOOD PLACEMENT

A. All installed plywood shall be in 4' x 8' sheets except where restricted by boundaries or changes.

B. Minimum Plywood Panel Sizes shall be as follows:

1. In horizontal plywood diaphragms, no panel less than 24 inches wide or 48 inches long shall be used.

2. In vertical plywood diaphragms, no panel less than 16 inches wide shall be used.

C. Center joints accurately over support unless otherwise shown on Drawings. Provide gapping of plywood substrate of 1/8-inch at abutting joints at all wall.

D. Protect plywood from moisture until succeeding component or materials are installed to cover plywood. Delaminating plywood shall be removed and replaced.

3.9 FASTENING

A. Use only common wire nails or spikes of standard lengths and gages as specified Table 2304.10.1, of the California Building Code, 2019.

B. For conditions not covered on drawings, Contractor to request clarification or provide penetration into piece receiving point not less than 1/2 length of the nail or spike, provided that 16d nails may be used to connect two pieces of nominal 2 inch thickness as specified by the Architect, and/or Structural Engineer and approved by the Division of the State Architect.

C. For bolts, drill holes 1/32-inch to 1/16-inch larger in diameter than bolts being used. Drill straight and true from one side only.

D. Bolt threads shall not bear on wood. Use washers under head and nut where both bear on wood. Use washers under nuts.

E. For lag-screws, and wood screws, pre-bore holes in accordance with CBC 2019, Title 24, Part 2, Chapter 23.

F. Screw, do not drive, lag screws and wood screws.

G. Nailing schedule shall be per CBC 2019, Title 24, Part 2, Chapter 23.

3.10 HOLLOW METAL FRAME GROUTING

A. At all exterior hollow metal jambs, drypack/grout the bottom 6-inch space between the hollow metal and 6-inch concrete curb at the wall. The intent is to fill solid the void between the frame and concrete curb. Install drypack/grout before any finishes are applied to the studs.

END OF SECTION

SECTION 062000

FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Handrails, chair-rails, trim, and soffits.

B. Related Sections:

1. Rough Carpentry; refer to Section 06 10 00.
2. Specialties; refer to Division 10.

1.2 REFERENCE STANDARDS

A. Woodwork Institute, 2nd Edition, 2014 Architectural Woodwork Standards, has recommendations for materials, construction, and installation procedures.

B. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

1.3 QUALITY ASSURANCE

A. Provide millwork fabricated in accordance with recommendations of Woodwork Institute. Fabricated millwork shall be certified and grades stamped with Woodwork Institute certification.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up off ground surface.

B. Do not store millwork outside. Do not deliver millwork to project until spaces or other surfaces to receive it are prepared.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading items to prevent damages, chips, splitting and breaking.

1.5 PROJECT CONDITIONS

A. Seasoning:

1. Deliver materials at earliest date possible to allow maximum drying time on site.

2. Air-season lumber for at least 60 days near job site before covering with finish materials.

1.6 SUBMITTALS

A. Provide manufacturer's standard color samples of plastic laminate (where applicable) and hardwood veneers for color and grain selection.

B. Provide Woodwork Institute Certified Compliance Certificates for millwork items, certifying that products fully comply with requirements of the grades specified.

C. Prepare Shop Drawings in accordance with Section 1 of the WI Standards referenced. Include the Woodwork Institute Certified Compliance label on the first page of each set of Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Finish Lumber: Graded in accordance with Western Wood Products Association Grading Rules; maximum moisture content of 15 percent.

ITEM	SPECIES	GRADE
Misc. Trim	Red Oak, rift cut	Custom
1 x 4 tongue and groove siding	Redwood	Grade A, square edge, random length.

2.2 ACCESSORIES

A. Nails, Spikes, and Staples: Common, except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

C. Machine Bolts: ASTM A307

D. Wood Preservative: Wolmanizing treatment at least two-weeks prior to delivery to site.

2.3 FABRICATION

A. Manufacture, mill, fabricate, assemble and finish millwork by skilled mechanics, using approved standard methods of manufacture and workmanship. Workmanship shall conform to the Custom Grade requirements of Woodwork Institute Manual referenced.

B. Conceal means of fastening where other than glue joinery is employed. Use fine casing nails, carefully set without hammer marks.

C. Level tops of counters and cabinetry to a tolerance of 1/32-inch in 4 feet in direction.

PART 3 - EXECUTION

3.1 PREPARATION

A. Selection of Lumber: Carefully select members so that defects will not interfere with proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

3.2 INSTALLATION

A. Installation of finish carpentry and millwork shall be in accordance with the applicable recommendations of the Woodwork Institute Manual, current edition, Architectural Woodwork Standards.

B. Install building specialty items specified under other sections which are not specified to be installed by specialty product manufacturer or supplier.

END OF SECTION

SECTION 064100 - PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes wood paneling.

1.3 SUBMITTALS

A. Product Data.

B. Shop drawings.

C. Visual samples: Submit two (minimum 4” x 6”) samples indicating color and texture to be expected in finished work.

D. Maintenance data: Give instructions for general maintenance and repair of surfaces and finishes.

1.4 QUALITY ASSURANCE

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 3 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paneling:
   1. Stikwood. (Basis of Design)
   2. Or equal.

2.2 WOOD PANELING

A. Product: Reclaimed Weathered Wood by Stikwood or equal.
   1. Description: Lightweight, real wood plank with a peel+stik adhesive tapeback.
   2. Common Name: American Eastern White Pine.
   3. Scientific Name: Pinus Strobus L.
   4. Grade: Recycled Original Weathered Patina Texture.
   5. Finish: Unfinished.
   6. Flame Spread Rating: (ASTME 84): Class A Treatment Option.
   7. Standard Milling: Flush Cut, No Tongue And Groove, Butt Joint.
   8. Installation: Peel and Stick.
   9. Certifications: Fsc® Recycled 100%, Indoor Advantage™ Gold.
   10. Indoor Air Quality Certified To Scs-Ec10.3-2014 V4.0.
   11. Typical Dimensions:
      a. Thickness: 5/32″.
      b. Width: 5″.
      c. Length(S): Random 12″–48″.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Panels are subject to the effects of humidity and temperature. Do not use in high humidity areas.

B. Open cartons and carefully inspect all panels.

3.2 INSTALLATION

A. Install all materials in strict accordance with the manufacturer’s installation instructions.

B. Avoid contamination of the panel faces with adhesives, solvents or cleaners during installation.

3.3 CLEANING

A. Clean panels, trim and hardware according to the manufacturer’s recommendations.

END OF SECTION 064100

SECTION 068200 - FIBER REINFORCED PLASTIC PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Fiber reinforced plastic panel system for adhesive mounting.
   2. Moldings, adhesive, and joint sealants.

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

C. Maintenance Instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of fiber reinforce plastic panels that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fiber Reinforced Plastic Panels: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Marlite. (Basis of Design)
   2. Formica. (Basis of Design)
   3. Nudo.
   4. Crane Composites (formerly Kemlite).
   5. Glasteel.
   6. Or equal.

2.2 PANEL SYSTEM

A. Plastic Panel System: Factory finished panels, trim, sealant, and accessories.

B. Product: Standard FRP by Marlite or equal.
   1. Fiberglass reinforced polyester, USDA approved for incidental food contact.
   2. Surface Burning Characteristics: Flame spread index of 200 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84 (Class C/III).
   3. Thickness: 3/32 inch, nominal.
   4. Width: 48 inches.
   5. Height: 96 inches.
   6. Flexural Strength: 17,000 psi, when tested in accordance with ASTM D 790.
   7. Flexural Modulus: 600,000 psi, when tested in accordance with ASTM D 790.
   8. Tensile Strength: 8,000 psi, when tested in accordance with ASTM D 638.
   9. Tensile Modulus: 9,430 psi, when tested in accordance with ASTM D 638.
   10. Barcol Hardness: 40, when tested in accordance with ASTM D 2583.
   11. Impact Resistance: 7 ft-lb/in, when tested in accordance with ASTM D 256, Izod method.
   12. Coefficient of Thermal Expansion: 0.0000157 in/in/degree F, measured in accordance with ASTM D 696.
   13. Water Absorption: 0.17 percent, when tested in accordance with ASTM D 570.
   14. Specific Gravity: 1.53, when tested in accordance with ASTM D 792.
   15. Front Finish: As indicated on Drawings.
      a. Color: As indicated on Drawings.

C. Product: HardStop Decorative Protection Panels by Formica or equal.
   1. Panel Core Material: Treated fiberglass core.
   2. Laminate Grade:
      a. Grade H1, 0.0677 Inches - 0.0827 Inches.
   3. Tested Data:
      a. ANSI / NEMA LD-3: High Pressure Decorative Laminates.
      b. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials. Class 1/A Fire-rated (UL723/ASTM E-84).
         1) Flame-Spread Index: 25 or less.
         2) Smoke-Developed Index: 450 or less.

c. GreenGuard Gold Indoor Air Quality Certified®.
d. SEFA 8.1 approved.
e. ASTM G 22 Bacterial Growth Resistance.

4. Laminate Finish: As indicated on Drawings.
5. Laminate Color(s): As indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Take panels out of cartons and allow to acclimatize to room conditions for at least 48 hours prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Clean surfaces thoroughly prior to installation.

D. Protect existing surfaces from damage due to installation.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use the adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.

C. Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch expansion space.

D. Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.

E. Protect installed products until completion of project.

F. Touch-up, repair or replace damaged products after Substantial Completion.

END OF SECTION 068200

DIVISION 7

THERMAL AND MOISTURE PROTECTION

SECTION 071909 - CONCRETE MOISTURE AND ALKALINITY TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for independent testing and inspection requirements for concrete moisture and alkalinity.

B. Related Sections include the following:
   1. Division 7 Section "Concrete Moisture and Alkalinity Barrier" for concrete sealers to reduce moisture and alkalinity level when testing fails.

1.3 SUBMITTALS

A. Independent testing agency qualifications: Past 4 year history of testing of comparable project size and scope.

B. Product data: Moisture test kit.

C. Testing Results: Provide interior temperature, humidity, moisture vapor and alkalinity results for testing period.
   1. Alkalinity and Adhesion Test Report.
   2. Moisture Test Report.

D. Locations Map: Provide each testing result documented on a locations map. Map may be finish floor plan by Architect or similar representation.

E. Record Submittals: Testing reports and locations map.

1.4 SCHEDULING

A. Site Meeting: Testing Agency, Owner, Architect and Contractor shall meet 30 days prior to flooring installation to discuss testing requirements, specifications and locations prior to testing.

PART 2 - PRODUCTS

2.1 MOISTURE TESTING

A. Test Method: ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
   1. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride is NOT acceptable method.

B. The In-Situ Method:
   1. In-situ probes deepen concrete moisture measurement. For decades, builders used (and some still do) the anhydrous calcium chloride test for concrete moisture vapor emissions rate (MVER). The MVER is defined as the rate of water vapor emissions from the surface of concrete and is determined with the use of a desiccant material sealed to the slab surface for a specified time period, then measured. It has been believed that the change in the desiccant weight could be translated into a moisture ratio for the concrete beneath.
   2. In-situ concrete moisture testing places sensors, or probes, inside the slab itself. As concrete dries, moisture migrates from the bottom of the slab to the surface where it can evaporate away. Logically then, moisture levels at the bottom of a slab will read higher from those at the surface. In-situ probes provide relative humidity (RH) measurements at 40% of the slab's depth*, a position proven to more accurately portray the final RH levels of the slab if it were to be sealed at that point in time and the slab moisture allowed to fully equilibrate.

C. Acceptable Testing Devices for ASTM F2170 Test:
   1. Wagner Meters Rapid RH® system by Wagner.
   2. Protimeter by T Equipment.
   3. Relative Humidity Meter system by American Moisture Test.
   4. Or equal.

2.2 ALKALINITY TESTING

A. Alkalinity Test, ASTM F 710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
   1. Digital wide range 1–14 pH meter.
   2. Waterproof flat tip.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site: Weatherproofed, doors installed and windows secured. Do not start testing process when site has standing water, surface contaminates, exposed to exterior conditions or concrete installation is less than 90 days of age.

3.2 PREPARATION

A. Clean concrete substrates of adhesives residue, paint, curing, sealing, floor coverings a minimum of 24 hours prior to installation of testing equipment.

B. Temperature & Humidity: Maintain site at the temperature and humidity conditions to those anticipated during normal occupancy and maintain these conditions minimum of 7 days (exceed ASTM F1869 requirements) prior and during testing period.

C. When a building is not under HVAC control, a recording hygrometer or data logger shall be in place recording conditions during the test period. A transcript of this information must be included with testing results.

3.3 MOISTURE TESTING

A. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F2170.

B. Floor shall have reading of 95% or less per ASTM F2170; unless finish flooring product require better value.

3.4 ALKALINITY TESTING

A. Test: Perform pH testing per ASTM F710.

B. pH range between 8 and 10; unless finish flooring product require better value.

3.5 FIELD QUALITY CONTROL

A. Testing: Engage and pay for qualified independent testing agency specified to perform the following field tests and inspections and prepare test reports:
   1. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures.
   2. Testing agency shall verify thickness of coatings during traffic coating application.
   3. If test results show coating materials do not comply with requirements, remove noncomplying materials, prepare surfaces, and reapply coatings.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 071909

SECTION 071920 - CONCRETE MOISTURE AND ALKALINITY BARRIER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplemental, and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Concrete moisture and alkalinity barrier when moisture or alkalinity test fails.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for independent moisture and alkalinity testing prior to installation of flooring materials.

1.3 PERFORMANCE REQUIREMENTS

A. Ground and Floor Surfaces: Slip resistant per CBC 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include manufacturer's printed statement of VOC content.

B. Samples: For each type of barrier and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

C. Manufacturer Certificates: Signed by manufacturers certifying that barrier comply with requirements.

D. Qualification Data: For Installer.

E. Product Test Reports: Independent third party testing results:
   1. ASTM E 96 Water Vapor Transmission: up to 95% Vapor Reduction
   2. ASTM D 4541 Concrete Adhesion: 500psi or concrete cohesive failure
   3. ASTM D 1308 Chemical Resistance: 100% resistant to acid and alkali

F. Field Quality Control Documents: Post installation testing by independent testing agency per ASTM F1869, ASTM D 4541.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Extended Warranty Period: Barrier warranty for 15 years covering performance, concrete adhesion, moisture or alkalinity damage to barrier and installed floor coverings. In the event of barrier failure, manufacturer shall cover labor and material cost to replace moisture or alkalinity damaged flooring or coatings, reapply barrier, adhesives, patching compounds and installation accessories.
   1. Moisture Vapor Reduction: No upper performance limitations.
   2. Alkalinity Control: No upper performance limitations.
   3. Manufacturing defects warranties are not acceptable.

B. Warranty shall not exclude ACI documents, dew point, concrete salts, admixtures, resin and silicate surfaces treatments. Installations on slab surfaces deems acceptance of on site conditions. Barrier manufacturer is responsible for complete review of concrete mix designs, admixtures, sub slab vapor barrier installed and curing methods for written acceptance prior to installations.

C. Installer: Submit 15 year warranty covering installation defects and improper installations on workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Concrete Moisture and Alkalinity Barrier: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. VAP-1 2000 FS by Koster. (Basis of Design)
   2. Vapor-Guard DC by Advance Moisture Control.
   3. MES 100 by Floor Seal Technology Inc.
   4. Or equal.

2.2 CONCRETE MOISTURE AND ALKALINITY BARRIER

A. Product: VAP I 2000 FS by Koster or equal.
   1. Fast-setting, one-coat, membrane-forming, moisture vapor control system consisting of a unique combination of epoxy resins and other compounds formulated to prevent floor covering failures on concrete slabs with elevated levels of moisture.
   2. Meets or exceeds the performance requirements in ASTM F3010-13 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
   3. Has no upper limit for water vapor emission from concrete floor slabs. It can be applied to concrete slabs with relative humidity up to 100% RH and it provides protection from sustained exposure to pH 14.
   4. Low permeance of 0.047 perms, moisture blocker for virtually all types of flooring, including low permeance flooring such as sheet goods and rubber tile.
   5. Compliant with all state and federal VOC regulations, having VOC content of 0 g/L, which allows installation in sensitive areas such as hospitals, schools, and grocery stores.

B. Concrete Topcoat: Cement based self-leveling underlayment product acceptable to sealant manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to barrier manufacturer's written instructions, to ensure that surface is dry enough.
   1. Shot blast surface to allow maximum penetration and adhesion. Grind near walls and edges.

B. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live plants and grass.

C. Coordination with Sealants: Do not apply barrier until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
   1. Barrier work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATION

A. Barrier: Apply by squeegee and roller application methods to saturate entire surface. Spread rates shall produce results of up to 95% moisture reduction per ASTM E 96 and post installation testing rate specified.

B. Roller and squeegee methods to saturate concrete porosity. Final surfaces shall be light reflective white.

C. Joint and Crack Treatment: Apply barrier directly over cracks, holes, and slab imperfections for maximum flexibility, moisture vapor and alkalinity control.

D. Cement Topcoat: As required for applications under resilient flooring for sealants installed after curing of concrete.

3.3 FIELD QUALITY CONTROL

A. Site Tests:
   1. Conduct moisture-alkalinity test by an independent testing company prior to resilient flooring and carpet installation.

3.4 CLEANING

A. Immediately clean barrier from adjoining surfaces and surfaces soiled or damaged by barrier application as work progresses. Repair damage caused by barrier application. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071920

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Concealed thermal and sound insulation.

B. Related Sections include the following:
   1. Division 9 Section "Gypsum Board" for installation in metal-framed assemblies of insulation specified by referencing this Section.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Surface-Burning Characteristics: ASTM E 84.
   2. Fire-Resistance Ratings: ASTM E 119.
   3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of building insulation that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass-Fiber Batt/Blanket Thermal and Sound Insulation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Johns Manville (JM). (Basis of Design)
   2. CertainTeed Corporation.
   3. Guardian Fiberglass, Inc.
   4. Knauf Fiber Glass.
   5. Owens Corning.
   6. Lamtec.
   7. Or equal.

B. Extruded Polystyrene Foam: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Styrofoam Z-Mate by Dow. (Basis of Design)
   2. Atlas.
   3. DiversiFoam Products.
   4. Owens Corning.
   5. Pactiv Building Products Division.
   6. Or equal.

2.2 GLASS-FIBER BATT/BLANKET INSULATION

A. Unfaced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics. Glass-fiber bonded with acrylic thermosetting binder.
   1. For walls and partitions: Unfaced Batts.

2. Formaldehyde-free, Unfaced Batts by JM or equal.

B. Faced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft vapor-retarder membrane on 1 face.
   1. For ceilings under decks: FSK-25 Faced Batts with 2 inch tabs or Panel Deck FSK-25 Faced Batts with 5 inch tabs.
   2. Formaldehyde-free, FSK-25 Faced Batts by JM or equal.

C. Thermal Rating: R values as indicated on Drawings.

2.3 EXTRUDED POLYSTYRENE FOAM (RIGID INSULATION)

A. Extruded Polystyrene Foam: ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively.
   1. 1.5 inch thick board: R-7.5.
   2. R-rating: Built-up board to comply with R-rating indicated on Drawing.

2.4 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inches wide.

B. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Install insulation in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
   4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
   5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically.
   6. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:

D. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces for sound deadening, sound absorption, thermal protection, or air-infiltration reduction. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

3.5 INSTALLATION OF INSULATION IN CEILINGS

A. Install insulation to achieve thermal indicated attached to roof or floor deck from below.

B. Insulation to roof or floor deck: Install by one of following methods.
   1. Staple insulation to sides of joists or trusses at 4 inches o.c. through bent down flanges of vapor barrier in such manner that air leaks between insulation and joints are minimized.
   2. Fasten insulation anchors to deck substrates with insulation anchor according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 076500 - FLEXIBLE SHEET FLASHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Flexible sheet flashing for windows, doors, parapets, and other openings and where indicated on Drawings.

1.3 SUBMITTALS

A. Concurrent Review Requirements: Submit submittals of this section with doors and windows sections.

B. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of flexible sheet flashing.

C. Shop Drawings: Show locations and extent of flexible sheet flashing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

D. Samples: For the following products:
   1. 12-by-12-inch square of flexible sheet flashing.

E. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

F. Qualification Data: For Installer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for flexible sheet flashing.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm that is acceptable to flexible sheet flashing manufacturer for installation of flexible sheet flashing required for this Project.

B. Source Limitations: Obtain flexible sheet flashing materials through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by flexible sheet flashing manufacturer.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Store rolls according to manufacturer's written instructions.

E. Protect stored materials from direct sunlight.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of flexible sheet flashing that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flexible Sheet Flashing: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. WR Grace (Basis of Design).
   2. FortiFlash by Fortifiber.
   3. FlexWrap and StraightFlash by DuPont.
   4. Or equal.

2.2 FLEXIBLE SHEET FLASHING

A. Product: Vycor Plus by WR Grace or equal.
   1. Self-Adhered, cross-laminated high-density polyethylene (HDPE) sheet, backed by aggressive pressure-sensitive rubberized asphalt adhesive.
   2. Thickness: 25 mil minimum per ASTM D3767, Method A.
   3. Low temperature flexibility: Unaffected at minus 45 degrees F. per ASTM D1970.

4. Elongation, ultimate failure of rubberized asphalt: 200 percent minimum per ASTM D412.
5. Cracked cycling 100 cycles: Unaffected at minus 25 degrees F. per ASTM C836.
6. Lap adhesion at minimum application temperature: 60 plf width per ASTM D1876 modified.
7. Adhesion to concrete at minimum application temperature: 60 plf width per ASTM D903.
8. ICBO: ER-6141.
9. Recommended exposure limit: 30 days.
10. Perm-A-Barrier by Grace is not acceptable.

2.3 AUXILIARY MATERIALS

A. Mastic, Joint Sealant, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by flexible sheet flashing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by flexible sheet flashing manufacturer.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install flexible sheet flashing in accordance with the manufacturer's written instructions, AAMA Publication 2400, and the applicable code.

END OF SECTION 076500

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

D. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.

E. Qualification Data: For Installer.

F. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
   1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
   2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

G. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
   1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
   2. When joint substrates are wet.
   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
   4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 2 years.

B. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
   1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

C. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Joint Sealants: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Sika Corporation
   2. Pecora Corporation.
   3. Bostik.
   4. Dow Corning Corp.
   5. GE Plastics.
   6. Sonneborn Building Products, ChemRex, Inc.
   7. Tremco, Inc.
   8. The Sherwin-Williams Company.
   9. Or equal.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

C. Colors of Exposed Joint Sealants:
   1. As selected by Architect from manufacturer's full range.
   2. Areas where concrete joint sealant will be adjacent to concrete other than standard gray, sealant color shall match adjacent color as approved by Architect.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
   3. Remove laitance and form-release agents from concrete.
      a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
   4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
   1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
   2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
   3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.

4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT LOCATION

A. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
   1. Products:
      a. SikaFlex 1A or 15LM by Sika Corp.
      b. Dynatrol I-XL by Pecora.
      c. Stampede 1 by The Sherwin-Williams Company.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Metal Lap Joint Sealant: Silicone, Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
   1. Products:
      a. SikaSil WS-295 Silicone by Sika Corp.
      b. 895 Silicone or Sil-Span by Pecora.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Concealed sealant bead in sheet metal work.

b. Concealed sealant bead in siding overlaps.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
1. Products:
a. AC-20 manufactured by Pecora.
b. 950A manufactured by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Applications:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Interior Floor Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Grade P, Class 25, Uses T, M and A; two-part.
1. Products:
a. SikaFlex 2C SL or NS with TG Additive by Sika Corp.
b. NR-200 self-leveling polyurethane and/or DYNATRED non-sag, traffic-grade polyurethane sealants by Pecora.
c. Stampede 2SL by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Standard colors matching finished surfaces.
4. Applications: Use for joints up to 1-1/2 inches.
a. Expansion joints in floors.

E. Concrete Paving Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Class 25, Uses T, I, M and A; two-part.
1. Products:
a. NR-200 Urexpan and/or DYNATRED non-sag, traffic-grade polyurethane sealant by Pecora or equal.
b. Stampede 2NS by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Gray or Limestone.
4. Applications:
a. Joints in sidewalks and vehicular paving.

F. Butyl Sealant: ASTM C 920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O; single component, solvent release, non-skinning, non-sagging.
1. Products:
a. BC-158 sealant by Pecora.
b. WL Silicone Rubber by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 12-1/2 percent.
4. Service Temperature Range: -13 to 180 degrees F.
5. Shore A Hardness Range: 10 to 30.

G. Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Products:
a. SikaSil WS 290 or WS 295 by Sika Corp.

b. 864 LM Architectural silicone or 890 silicone sealant by Pecora.
c. 790 by Dow Corning Corporation.
d. WL Silicone Ultra WL09210.

2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 25 percent.
4. Applications:
   a. Interior or exterior for joints 1/8 to 1-1/2 inch wide.
   b. Exterior use at expansion joints in masonry where substantial movement is expected.
   c. Glazing application.

END OF SECTION 079200

DIVISION 8

DOORS AND WINDOWS

SECTION 081113 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Standard hollow metal doors and frames.

B. Related Sections include the following:
   1. Division 8 Section “Door Hardware” for door hardware for hollow metal doors.
   2. Division 9 Section “Painting” for field painting hollow metal doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings.

B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
   1. Provide additional protection to prevent damage to finish of factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.
   1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of steel doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Steel Doors and Frames: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Steelcraft; an Ingersoll-Rand company. (Basis of Design).
   2. Ceco Door Products; an Assa Abloy Group company.
   3. Curries Company; an Assa Abloy Group company.
   4. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B; suitable for exposed applications for interior doors and frames.

B. Galvannealed (Metallic-Coated) Steel Sheet: ASTM A 653, Commercial Steel (CS), Type B; with minimum A60 metallic coating for exterior doors and frames.

C. Frame Anchors: ASTM A 591, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
   1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008 or ASTM A 1011, hot-dip galvanized according to ASTM A 153, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153.

E. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.

F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143.

G. Glazing: Comply with requirements in Division 8 Section "Glazing."
   1. Wired glass is not allowed.
   2. Tempered or fire-rated where required.

H. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD HOLLOW METAL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
   1. Design: Flush panel.
   2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
      a. Standard Core: Honeycomb, U-factor of 0.69, R-value of 1.45.
      b. Fire Door Core: As required to provide fire-protection indicated.
   3. Vertical Edges for Single-Acting Doors: Beveled edge.
      a. Beveled Edge: 1/8 inch in 2 inches.
   4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
   5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.
   6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
   7. Vision, Narrow Lite, Half Glass Doors: Size as indicated on Drawings.

B. Exterior Doors: Face sheets fabricated from galvannealed (metallic-coated) steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 16 gage (0.053 inch).
         1) Product: Series L16 by Steelcraft.

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless galvanized (metallic-coated) sheet is indicated. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 18 gage (0.042 inch).
         1) Product: Series L18 by Steelcraft.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.4 STANDARD HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated from metallic-coated steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile welded unless otherwise indicated.
   3. Frame: 14 gage (0.067-inch) thick steel sheet.
      a. Product: F14 Series by Steelcraft.

C. Interior Frames: Fabricated from cold-rolled steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile welded. Knocked down is not allowed.
   3. Frame: 16 gage (0.053-inch) thick steel sheet.
      a. Product: F16 Series by Steelcraft.
   4. Frames for Wood Doors: Same type as for steel doors.
   5. Frames for Borrowed Lights: Same as adjacent door frame.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
   2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
   3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
   1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
   2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- wide steel.

C. Provide Screw-In Top Cap for exterior doors.

D. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

2.7 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Tolerances:
   1. Standard doors and frames: Fabricate hollow metal work to tolerances indicated in SDI 117.

C. Hollow Metal Doors:
   1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
   2. Glazed Lites: Factory cut openings in doors.
   3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
   2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
6. Jamb Anchors: Provide number and spacing of anchors as follows:
   a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      1) Three anchors per jamb up to 60 inches high.
      2) Four anchors per jamb from 60 to 90 inches high.
      3) Five anchors per jamb from 90 to 96 inches high.
      4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
      5) Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.
   b. Compression Type: Not less than two anchors in each jamb.
   c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
   1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
   2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
   3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.

G. Air Infiltration: Maximum rate not more than indicated when tested according to AAMA/WDMA 101/I.S.2/NAFS, Air Infiltration Test.
   1. Maximum Rate: 0.3 cfm/sq. ft. of area at an inward test pressure of 1.57 lbf/sq. ft.
   2. Maximum Rate: 0.1 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft.

2.8 STEEL FINISHES

A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Field-Applied Paint Finish: Comply with Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
   1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
   1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire-protection-rated openings, install frames according to NFPA 80.

b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
c. Install frames with removable glazing stops located on secure side of opening.
d. Install door silencers in frames before grouting.
e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
g. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
   a. Post-installed expansion anchors shall comply with IR 19-1.
   b. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
7. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
   a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes solid-core doors.

B. Related Sections include the following:
   1. Division 8 Section "Steel Doors and Frames" steel door frames.

1.3 SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.

B. Other Action Submittals:
   1. Schedule: Provide a schedule of flush wood door work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
      a. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
      b. Indicated specific model number of door and frame.
      c. Indicated hardware group.
      d. Indicate dimensions and locations of mortises and holes for hardware.
      e. Indicate dimensions and locations of cutouts.
      f. Indicate doors to be factory finished and finish requirements.
      g. Indicate fire ratings for fire doors.

C. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:
   1. Faces of Factory-Finished Doors: Show the full range of colors available for stained finishes.

D. Samples for Verification:
   1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edgings representing typical range of color and grain for each species of veneer and solid lumber required. Finish sample with same materials proposed for factory-finished doors.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

B. Quality Standard: Comply with NWWDA I.S.1-A, "Architectural Wood Flush Doors."
1. Performance duty Level: Extra Heavy Duty.
2. Factory machined for door hardware and high density hardware blocking.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to CBC Section 715.
1. Oversize, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide oversize fire door label or certificate of inspection, from a testing and inspecting agency acceptable to authorities having jurisdiction, stating that doors comply with requirements of design, materials, and construction.
2. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch top to bottom, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty:
   a. Solid-Core Interior Doors: Life of installation.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flush Wood Doors: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Architectural Series by Oregon Door. (Basis of Design)
      a. Profile: Standard Profile, PC-5.
   2. Marshfield-Algoma; Masonite Inc.
   3. Eggers Industries; Architectural Door Division.
   4. VT Industries Inc.
   5. Or equal.

2.2 DOOR CONSTRUCTION, GENERAL

A. Adhesives: Do not use adhesives containing urea formaldehyde.

B. Doors for Transparent Finish:
   1. Grade: Custom (Grade A faces).
   2. Species and Cut: Plain sliced white birch, rotary cut.
   3. Match between Veneer Leaves: Book match.
   4. Assembly of Veneer Leaves on Door Faces: Running match.
   5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
   6. Stiles: Same species as faces.

2.3 SOLID-CORE DOORS

A. Core:
   1. Structural-Composite-Lumber-Core: WDMA I.S.10.
      a. Screw Withdrawal, Face: 700 lbf.
      b. Screw Withdrawal, Edge: 400 lbf.

B. Doors:
   1. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

C. Veneer-Faced Doors:

1. Construction: Five or seven plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

D. Fire-Rated Doors:
1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
2. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.
3. Edge Construction: At hinge stiles, provide manufacturer's standard laminated-edge construction with improved screw-holding capability and split resistance and with outer stile matching face veneer.
4. Pairs: Furnish formed-steel edges and astragals with intumescent seals for pairs of fire-rated doors, unless otherwise indicated.
   a. Finish steel edges and astragals with baked enamel same color as doors.

2.4 DOOR FRAMES

A. Hollow Metal Frames: Comply with Division 8 Section “Steel Door and Frames”.

2.5 FABRICATION

A. Fabricate doors in sizes indicated for Project-site fitting.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing.

B. Finish doors at factory.

C. Transparent Finish:
1. Grade: Custom.
2. Finish: NWWDA I.S.1-A System TR-6 catalyzed polyurethane.
3. Staining: As selected by Architect from manufacturer's full range.
4. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.
   1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Division 8 Section "Door Hardware."

B. Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
   1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
   1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold.
      a. Comply with NFPA 80 for fire-rated doors.
   2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
   3. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Access doors and frames for walls and ceilings.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for mortise or rim cylinder locks and master keying.
   2. Division 9 Section “Painting” for field applied finishes.

1.3 SUBMITTALS

A. Product Data: For each type of access door and frame indicated. Include construction details, materials, individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.

D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of access door(s) and frame(s) through one source from a single manufacturer.

B. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of access doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Access Doors and Frames: Subject to compliance with requirements, provide products by one of the following:
   1. Karp Associates Inc.
   2. Acudor.
   3. Milcor Inc.
   4. Nystrom, Inc.
   5. MIFAB.
   6. Or equal.

2.2 STEEL MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153, for galvanizing steel and iron hardware.

B. Steel Sheet: Cold-rolled steel sheet substrate complying with ASTM A 1008, Commercial Steel (CS), exposed.

C. Steel Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   1. Factory Surface Preparation for Steel Sheet: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
   2. Field Finish: Factory prime for field painting as specified in Division 9 "Painting".

D. Drywall Beads: Edge trim formed from 0.0299-inch zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum board.

2.3 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Recessed Door to Receive Drywall Type:
   1. Fire-Rated: Model 450FR by Karp.
   2. Non-Fire-Rated: Model RDW by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Door shall be recessed 1 inch.
   5. Trim shall be galvanized steel dry wall bead.
   6. Hinge shall be concealed pivoting rod type.
   7. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   8. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   9. Door Sizes:
      a. As indicated on Drawings.
   10. Field Finish: Comply with Division 9 Section “Painting”.

B. Flange Type:
   1. Fire-Rated: Model KRP-250 by Karp.
   2. Non-Fire-Rated: Model DSC-214M by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Flange: One-piece construction, 3/4 inch wide.
   5. Hinge shall be concealed continuous piano hinge.
   6. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   7. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   8. Door Sizes:
      a. As indicated on Drawings.
   9. Field Finish: Comply with Division 9 Section “Painting”.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
   1. Exposed Flanges: Nominal 1 to 1-1/2 inches wide around perimeter of frame.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
   1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

A. Field finish per Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 083214 - FOLDING ALUMINUM-FRAMED GLASS DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding aluminum-framed glass doors.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for hardware not specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide folding aluminum-framed glass doors capable of complying with performance requirements indicated, based on testing manufacturer's folding doors that are representative of those specified, and that are of minimum test size indicated below:
   1. Size required by AAMA/WDMA/CSA 101/I.S.2/A440 for gateway performance.

B. Structural Performance: Provide folding aluminum-framed glass doors capable of withstanding the effects of the following loads, based on testing units representative of those indicated for Project that pass AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Load Structural Test:
   1. Design Wind Loads: Determine design wind loads under conditions indicated according to ASCE/SEI 7.
   2. Deflection Limits: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less, at design pressure based on testing performed according to AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Load Deflection Test, or structural computations.

C. Windborne-Debris Resistance: Provide sliding aluminum-framed glass doors capable of resisting impact from windborne debris, based on the pass/fail criteria as determined from testing sliding aluminum-frames glass doors identical to those specified, according to ASTM E 1886 and testing information in ASTM E 1996 or AAMA 506 and requirements of authorities having jurisdiction.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions.

B. Shop Drawings: For folding aluminum-framed glass doors. Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, and the following:
   1. Mullion details for fenestration combinations including reinforcement and stiffeners.
   2. Joinery details.
   3. Expansion provisions.
   4. Flashing and drainage details.
   5. Weather-stripping details.
   6. Thermal-break details.
   7. Glazing details.
   8. Accessories.

C. Samples for Initial Selection: For each type of folding aluminum-framed glass door indicated.
   1. Include similar Samples of hardware and accessories involving color selection.

D. Samples for Verification: For folding aluminum-framed glass doors and components required, prepared on Samples of size indicated below:
   1. Main Framing Member: 12-inch- long section with weather stripping, glazing bead and factory-applied color finish.
   2. Hardware: Full-size units with factory-applied finish.

E. Qualification Data: For qualified Installer and manufacturer.

F. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency, for each class, grade, and size of folding aluminum-framed glass door. Test results based on use of downsized test doors will not be accepted.

G. Maintenance Data: For finishes, weather stripping, operable panels, and operating hardware to include in maintenance manuals.

H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating folding aluminum-framed glass doors that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: An installer acceptable to folding door manufacturer for installation of units required for this Project.
   1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility including preparation of data for folding aluminum-framed glass doors, including Shop Drawings and Designated-Design Submittal, based on

testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: Obtain folding aluminum-framed glass doors from single source from single manufacturer.

D. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of folding aluminum-framed glass doors. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

E. Fenestration Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440, "Standard/Specification for Windows, Doors, and Unit Skylights," for minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
   1. Provide AAMA or WDMA-certified, folding aluminum-framed glass doors with an attached label.

F. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201.
   1. Subject to compliance with requirements, permanently mark safety glass with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction.

G. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of folding aluminum-framed glass door openings by field measurements before fabrication.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of folding aluminum-framed glass doors that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to meet performance requirements.
      b. Structural failures including excessive deflection.
      c. Water leakage or air infiltration.
      d. Faulty operation of movable sash and hardware.
      e. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      f. Deterioration of insulating glass as defined in Division 8 Section "Glazing."
   2. Warranty Period:
      a. Folding Door: 5 years.

b. Glazing: 10 years.
c. Metal Finish: 5 years.

B. Installer's Warranty: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Folding Aluminum-Framed Glass Doors:
1. Nana Wall Systems, Inc. (Basis of Design)
2. Fleetwood.
3. Western.
4. LaCantina Doors.
5. Or equal.

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by folding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.

B. Fasteners: Provide fasteners of aluminum, nonmagnetic stainless steel, or other materials warranted by manufacturer to be noncorrosive for SC 3 severe service conditions and compatible with members, trim, hardware, anchors, and other components of folding aluminum-framed glass doors. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.
1. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Accessories: Provide anchors, clips, and accessories of aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron for folding aluminum-framed glass doors, complying with ASTM B 456 or ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Provide aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel reinforcing members that are noncorrosive for SC 3 severe service conditions and that comply with AAMA/WDMA/CSA 101/I.S.2/A440; provide sufficient strength to withstand design pressure indicated.

E. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action, and completely concealed when folding aluminum-framed glass door is closed.
1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/WDMA/CSA 101/I.S.2/A440.

F. Folding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701.
   1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semirigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 702.

G. Sealant: For sealants required within fabricated folding doors, provide folding aluminum-framed glass door manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

H. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

2.3 FOLDING DOOR

A. Product: SL45 Aluminum Framed Folding System by Nanawall or equal.
   1. General Description:
      a. Monumental, standard aluminum folding system designed to provide an opening glass wall or storefront up to 43’ wide and a paired panel system forunlimited total width; see Maximum Size Chart. The folding system is available in various configurations utilizing one to twelve panels or more with unhinged pairs of panels; see elevation drawings. The option exists for swing entry/exit panel(s), but note panel size constraints with a swing panel not hinged to a side jamb. There are many design possibilities; units can be either: all inward-opening or all outward-opening; some panels inward-opening and some panels outward- opening; panels can be center-pivoted; see details in section drawings.
   2. Frame and Panels:
      a. The nominal extruded aluminum frame and panel thickness is 1 3/4” (45 mm).
      b. Panels are pre-assembled, and all pins and screws needed to assemble frames are provided. On a folding pair of panels hinged to a side jamb, the panel hinged to the side jamb is 2” (52 mm) narrower in nominal width than the other panels.
   3. Sliding/Folding Hardware:
      a. For sliding and folding each pair of panels, a patented, loadbearing, upper-running carriage is attached to the upper corner of a panel; see section drawings. Attached to the lower corner is a lower-running carriage as a guide. The double pair, twin-tandem, upper-running carriage is constructed to ensure even pressure distribution on all four rollers.
      b. Rollers have sealed bearings and are coated with toughened Polyamide to ensure a quiet running and optimal resistance to extreme. Two to five hinges per connection are provided to connect panels together and to connect panels to frames.
      c. Finish for zinc die cast hinges would be closest powder coat match to panel profile. Available as an option are stainless steel hinges.
      d. Removable custodial hardware in lieu of pull handles at operable panels.
   4. Tested Data:
      a. Air Infiltration per ASTM E-283,cfm/ft2: 1.57 psf.
      b. Water Penetration per ASTM E-547: 1.56 psf.
      c. Acoustical Performance: The SL45 with STC 40 laminated glass achieved STC and Rw values of 36.

2.4 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Finish and Color: Match Division 8 Section “Aluminum-Framed Entrances and Storefronts” as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
   1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
   2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches of opening.
   3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

B. Verify rough opening dimensions, levelness of threshold substrate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight folding aluminum-framed glass door installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing doors, hardware, accessories, and other components.

B. Install folding aluminum-framed glass doors level, plumb, square, true to line, without distortion, warp or rack of frames and panels, or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing, vapor retarders, air barriers, water/weather barriers, and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

D. Install folding aluminum-framed glass doors and components to drain condensation, water penetrating joints, and moisture migrating within doors to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials according to ASTM E 2112, Section 5.12 "Dissimilar Materials."

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Lubricate hardware and moving parts.

B. Adjust operating panels and screens to provide a tight fit at contact points and weather stripping for smooth operation, without binding, and a weathertight closure.

C. Adjust hardware for proper alignment, smooth operation, and proper latching without unnecessary force or excessive clearance.

D. Clean aluminum surfaces immediately after installing folding doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Avoid damaging protective coatings and finishes. Remove nonpermanent labels, and clean surfaces.

E. Clean glass immediately after installing folding aluminum-framed glass doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.

F. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

G. Protect folding door surfaces from contact with contaminating substances resulting from construction operations. During construction, monitor folding door surfaces adjacent to and below exterior concrete and masonry surfaces for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact folding door surfaces, remove contaminants immediately according to manufacturer's written instructions.

H. Refinish or replace folding aluminum-framed glass doors with damaged finishes.

I. Replace damaged components.

END OF SECTION 083214

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. DSA Deferred Approval.
   2. Aluminum-framed storefronts.
   3. Manual-swing aluminum doors.

B. Related Sections include the following:
   1. Division 1 Section “Submittal Procedures” for additional DSA Deferred Approval requirements.
   2. Division 7 Section “Flexible Sheet Flashing” for flashing windows, door, and other openings.
   3. Division 7 Section "Joint Sealants" for installation of joint sealants installed with aluminum-framed systems and for sealants to the extent not specified in this Section.
   4. Division 8 Section “Steel Doors and Frames” for windows made of hollow metal frames.
   5. Division 8 Section "Glazing" for glazing requirements to the extent not specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
   1. Structural loads.
   2. Thermal movements.
   3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
   4. Dimensional tolerances of building frame and other adjacent construction.
   5. Failure includes the following:
      a. Deflection exceeding specified limits.
      b. Thermal stresses transferred to building structure.
      c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
      d. Noise or vibration created by wind and thermal and structural movements.
      e. Loosening or weakening of fasteners, attachments, and other components.
      f. Sealant failure.
      g. Failure of operating units to function properly.

B. Structural Loads:
   1. Wind Loads: As indicated on Drawings.
   2. Seismic Loads: As indicated on Drawings.

C. Deflection of Framing Members:
   1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
   2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:
   1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity but not less than 10 seconds.

E. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft.

F. Water Penetration Under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

G. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 53 when tested according to AAMA 1503.

H. Average Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having average U-factor of not more than 0.69 Btu/sq. ft. x h x deg F when tested according to AAMA 1503 or NFRC 100/200 values.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product indicated.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

C. Fabrication Sample: Of each vertical-to-horizontal intersection of systems, made from 12-inch lengths of full-size components and showing details of the following:
   1. Joinery.

2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems.

E. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Capable of assuming engineering responsibility and performing work of this Section and who is acceptable to manufacturer.
1. Engineering Responsibility: Preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer's standard assemblies.

B. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

C. Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

D. Welding: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code--Aluminum."

E. Mockups: Build mockups to demonstrate aesthetic effects and set quality standards for fabrication and installation.
1. Build mockup of typical wall area as shown on Drawings.
2. Field testing shall be performed on mockups according to requirements in Part 3 "Field Quality Control" Article.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 WARRANTY

A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including, but not limited to, excessive deflection.
      b. Noise or vibration caused by thermal movements.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      d. Water leakage through fixed glazing and framing areas.
      e. Failure of operating components to function properly.
   2. Warranty Period: 2 years.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.

C. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Entrance, Storefronts, and Windows: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Arcadia Inc. (Basis of Design)
   2. Kawneer.
   3. EFCO Corporation.
   4. Oldcastle Building Envelop.
   5. Or equal.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   1. Sheet and Plate: ASTM B 209.
   2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308.
5. Welding Rods and Bare Electrodes: AWS A5.10.

B. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
1. Structural Shapes, Plates, and Bars: ASTM A 36.
2. Cold-Rolled Sheet and Strip: ASTM A 1008.
3. Hot-Rolled Sheet and Strip: ASTM A 1011.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

F. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

G. Product: TC470 Thermally Broken Series by Arcadia or equal.
1. Type: 2-1/4 by 4-1/2 inch offset captured glazed system.
2. Framing members, transition members, mullions, adaptors, and mounting: Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10a T6).
3. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM.A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.
4. Glazing: As indicated on Drawings and as specified in Division 8 “Glazing”.
5. Glazing Gasket (Silicone Compatible)
   a. Compression-type design, replaceable, molded or extruded santoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).

b. Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.

6. Sound Transmission Lost Test by ETS-Lindgren Acoustical Research Laboratory, a NVLAP-Accredited under Lab Code 100286-0.
   a. STC: 36.

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 8 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

2.5 DOORS AND FRAMES

A. Product: WS512 Series, Wide Stile Door 1-3/4” by Arcadia.
   1. Vertical Stiles: 5 inches.
   2. Top Rail: 5-1/8 inches.
   3. Bottom Rail: 10-1/2 inches.
   4. Glazing Stops: Square snap-in type.
   5. Glazing: 1/4 inch as specified in Division 8 Section “Glazing”.
   6. Glazing Gasket: Compression-type design.
   7. Major portions of the door stiles a nominal .125 inches and glass stops .050 inches thick.
   8. Door members: Extruded 6063-T6 aluminum alloy (ASTM B221-Alloy G.S. 10a T6).
   9. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc plated steel in accordance with ASTM A-164. Shall be aluminum or steel, providing the steel is properly isolated from aluminum.
   10. Stiles and rails shall be tubular sections accurately joined, flush and hairline at corners with heavy concealed reinforcement brackets secured with machine bolts, with optional MIG weld. Exposed screws not permitted.
   11. Each door leaf equipped with an adjusting mechanism, located in the top rail near the lock stile.
   12. Prepare internal reinforcement for door hardware.
   13. Weatherstripping: Hard-backed poly pile in door and/or frame. Meeting stile of all pair of doors have a double line hard-backed poly-pile astragal.

B. Door Hardware: Factory hardware and as specified in Division 8 Section "Door Hardware."
   1. Door hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the general contractor and the entrance manufacturer to insure the building project is not delayed. Coordinate master-keyed requirements.

2. Weather Stripping: Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC to keep the water out. Do not use standard brush type.
3. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.6 ACCESSORY MATERIALS

A. Insulating Materials: As specified in Division 7 Section "Building Insulation."

B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 7 Section "Joint Sealants."

C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

D. Break Metal: Material and finish to match storefronts as approved by Architect.

2.7 FABRICATION

A. Form aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing from interior.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing (without projecting stops).

E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

F. Doors: Reinforce doors as required for installing hardware.

1. At pairs of exterior doors, provide sliding weather stripping retained in adjustable strip mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Hardware Installation:
1. Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.
2. Hardware supplier shall furnish hardware to door manufacturer prior to fabrication and coordinate hardware delivery with door manufacturer to insure project is not delayed.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
1. Color: Dark Bronze #40 as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:
1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight, unless otherwise indicated.

B. Metal Protection:
   1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
   2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

F. Entrances: Install to produce smooth operation and tight fit at contact points.
   1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
   2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

G. Install insulation materials as specified in Division 7 Section "Building Insulation."

H. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

I. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
   1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
   2. Alignment:
      a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
      b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
   3. Diagonal Measurements: Limit difference between diagonal measurement to 1/8 inch.

3.3 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.
   1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

END OF SECTION 084113

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Door hardware.

2. Door Hardware Schedule.

1.02 DESIGN REQUIREMENTS

A. Design Requirements:

1. Exit doors, including each leaf of a pair of doors, shall always be operable from the inside by the simple turn of a lever or by pushing an exit device without the use of a key or any special knowledge or effort; this includes doors of storage rooms.

2. Unless otherwise specified, hand activated door opening hardware shall be located 36 inches above the finish floor.

3. Dead bolts are not permitted unless operable with a single effort by a lever type hardware.

4. The force applied to operate exit hardware shall not require more than 5 lbs. maximum applied in the direction of travel.

5. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.

6. The clear opening width for a door shall be 32" minimum. For a swinging door it shall be measured between the face of the door & the stop, with the door open 90 degrees. There shall be no projections into it below 34" and 4" maximum projections into it between 34" and 80" above the finish floor or ground. Door closers and stops shall be permitted to be 78" minimum above the finish floor or ground. CBC Section 11B-404.2.3.

7. Handles, pulls, latches, locks and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. Operable parts of such hardware shall be 34" minimum and 44" maximum above the finish floor or ground. Where sliding doors are in the fully open position, operable hardware shall be exposed and usable from both sides. CBC 11B-404.2.7.

8. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.

    a. Interior hinged doors, sliding or folding doors and hinged doors: 5 pounds. Maximum. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in the closed position.

    b. The force required for activating any operable parts, such as lever hardware or disengaging other devices shall be 5 pounds maximum to comply with CBC 1B-309.

B. Regulatory Requirements:

1. Comply with CBC requirements.

2. Hardware for fire doors shall conform to requirements of UL - Fire Protection and Accident Hazard Equipment and the California State Fire Marshal listing, NFPA - 80 and CBC requirements for positive pressure testing.

3. Hardware shall meet the requirements of CBC, Chapter 11B.

4. Door closing speed shall be as follows: CBC Section 11B-404.2.8. Closer shall be adjusted so the required time to move a door from a open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum. Spring hinges shall be adjusted so that the time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.

5. Threshold shall comply with CBC section 11B-404.2.5.

6. Floor stops shall not be located in the path of travel and 4” maximum from walls.

7. Hardware (including panic hardware) shall not be provided with “Night Latch” (NL) function for any accessible doors or gates unless the following conditions are met: (Such conditions must be clearly demonstrated and indicated in the specifications) Such hardware has a dogging feature and it is dogged during the time the facility is open.

1.03 SUBMITTALS

A. Product Data: Finish Hardware Schedule:

1. Submit schedule including recap sheet:

a. Include manufacturer’s name, catalog number, relevant dimensions, fasteners, location of item in Work, door index number, frame material, door material, door size and thickness, door type, handing, fire-rating (if any), and sound-rating (if any).

b. Hardware shall be listed by "Headings" in following manner:

1) HEADING NO. 1

1 SINGLE/PAIR OF DOORS NO. (Room and Number) from/to (Room and Number)

1 SINGLE/PAIR OF DOORS NO. (Room and Number) from/to (Room and Number)

List the appropriate numbers from the finish hardware.

2) HEADING NO. 2, etc.

1.04 QUALITY ASSURANCE

A. Each type of finish hardware furnished for the Work shall be of same make or manufacture, unless otherwise specified. Where existing items are being supplemented with new items, match existing items, subject to current code requirements and accessibility recommendations.

B. Coordinate and deliver templates or physical Samples of finish hardware items to manufacturer of interfacing items, such as doors and frames, in a timely manner to insure orderly progress of Work.

C. Comply with the following as a minimum requirement:

1. Conform to Builders Hardware Manufacturers Association (BHMA) Finish Code, latest edition.

2. DHI WDHS.3: Recommended Locations for Architectural Hardware for Wood Flush Doors

3. DHI WDHS.4: Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors.

4. HMMA 831: Recommended Hardware Locations for Custom Hollow Metal Doors and Frames

1.05 DELIVERY, STORAGE AND HANDLING

A. Package each item of hardware and each lockset individually, complete with necessary installation instructions, screws and fastenings, and installation templates; marked with item number corresponding to number on Finish Hardware Schedule.

1.06 WARRANTY

A. Manufacturer shall provide a minimum two year material warranty except as follows:

1. Provide a ten year manufacturer's material warranty for door closers.

2. Provide a five year manufacturer's material warranty for locksets and exit devices.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Butts and Hinges:

1. Width of hinges shall be of sufficient size to clear trim.

2. Furnish one pair of hinges for door leaves up to 5-foot high. Furnish one additional hinge for every additional 30 inches or fraction thereof.

3. Butts for doors shall be non-rising, loose pins, with button tip.

4. Exterior and interior out-swinging doors with butt hinges shall be furnished with hinges furnished with a setscrew in hinge barrel to make pin non-removable (NRP); Butt hinges at exterior out-swinging doors shall have stainless steel pins and bearings.

5. Hinges installed on painted doors shall be BHMA 600 finishes. Exterior doors shall have non-ferrous hinges. Fire-rated doors shall have steel or stainless steel hinges.

B. Locksets and Trim:

1. Unless otherwise specified, locks shall be of mortise type, complying with ANSI A156.13, grade 1.

2. Unless otherwise specified, escutcheons shall be 7 ½-inch by 2 ¼-inch wide by 0.050 thick minimum.

3. Levers shall be cast, and shall return to within ½ inch of face of door.

4. Outside lever shall be pinned. Inside lever shall be by "Allen Head Set Screw" or by "Spanner Ring Nut".

5. Lock strikes shall be curved lip type, with exposed edges and corners rounded, of sufficient length to protect jamb and trim, and shall not extend more than 1/8 inch beyond trim, jambs or face of doors in pairs. At out-swinging pairs with overlapping astragal, strike shall have a 7/8 inch lip-to-center dimension. Dust box shall be provided for door locks.

6. Locksets throughout shall be lever type of same manufacture.

C. Exit Devices:

1. Unless otherwise specified, exterior doors shall be furnished with rim touch bar device; right hand reverse active leaf - night latch function by cylinder by hardened cylinder ring by flush pull by sex nut and bolt. Left-hand reverse inactive leaf - exit only by flush pull by sex nut and bolt.

2. Unless otherwise specified, interior doors shall be furnished with rim touch bar device; right hand reverse active leaf-lever handle by cylinder, left hand reverse inactive leaf; exit only.

3. Fire labeled exit devices shall conform to UL label requirements and be listed by the California State Fire Marshal.

4. Exit devices throughout shall be touch bar types of same manufacture. Exit devices shall meet ANSI BHMA, A153.3 Grade 1.

5. Lever design shall match lock levers.

6. Exit devices shall be furnished sized for the specific door width and height.

D. Door Closers:

1. Door closers shall conform to ANSI A156.4, Grade 1, CBC 1133B.2.5.

2. Door closers shall be heavy duty, rigid parallel arm; provide regular arm for regular bevel doors.

3. Door closer shall be full rack and pinion type, adjustable back check, and sweep and latch speed with key regulating screws.

4. Door closer shall have full fitted cover of plastic or stainless steel, attached to door closer body with tamperproof screws.

5. Provide spacer block or support bracket for securing fifth screw on closer arm shoe. Provide special brackets, shoes, or other attachment devices as required.

6. Maximum pressure to operate doors shall not exceed following:

a. Fire rated doors: The authority having jurisdiction may determine the maximum force, not to exceed 15.0 pounds to operate fire doors to achieve positive latching.

b. Exterior doors: 5.0 pounds.

c. Interior doors: 5.0 pounds.

7. Door closers shall be installed at the following:

a. Exterior doors.

b. Fire rated doors.

E. Protection Plates: Furnish kick plates of 10-inch high by 2-inch less door width on single doors, 10-inch high by 1 inch less door width on pairs of doors. Provide one plate for push side of closer-equipped doors.

1. Kick shall be a minimum 0.050 inch thick; Type 304 stainless steel, with finished beveled edges (B4E).

F. Stops:

1. Floor stops shall be mounted to protect door and trim.

2. Furnish stop of appropriate height, minimum ¾ inch above undercut of door.

3. Where the specified floor stop cannot be installed or would present a pedestrian hazard, omit and furnish a heavy-duty overhead stop (626 finish); if closer is specified, furnish closer with integral spring-cushion stop arm.

G. Weather stripping/Gasketing:

1. Install gaskets and intumescent seals on fire rated doors and frames.

2. Unless otherwise specified, install weather stripping on doors from air-conditioned spaces to the exterior: fastener-applied frame seals, nylon-brush door sweeps, and, at pairs, astragals.

H. Thresholds: Unless otherwise specified, thresholds shall conform to CBC Chapter 11B accessibility standards.

I. Push Plates: Plates shall be 0.050 thick, 6-inch by 16-inch minimum, with beveled edges.

1. Door Pulls: Pulls shall have protective plate mounted under pull, 0.050 inches thick, 4-inch by 16-inch beveled on four edges.

2. Hardware Cutouts: Pull plates and push plates installed over locking hardware shall have cylinder and turn lever cutouts as required.

J. Automatic Flush Bolts:

1. Strike plates for automatic bolts shall be provided for active door.

2. Provide dust proof strikes for bottom bolts.

K. Coordinators:

1. Provide brackets as required for items fastened to coordinators.

2. Provide door strike plates for both doors with coordinators.

L. Fasteners: Shall match finish of hardware. Provide fasteners for all hardware at electrical room and exterior doors: stainless steel for chrome, aluminum, or stainless finish hardware; brass or bronze for brass or bronze finish hardware.

2.02 FINISH

A. Unless otherwise specified, finish of hardware shall be dull chromium-plated BHMA 652 for steel-based metals, BHMA 626 for brass-based metals, except for kickplate, escutcheons, push plates, lock strike plates, and exit device touch bars, which shall be BHMA 630. Levers for locksets and exit devices shall be BHMA 626.

B. Unless otherwise specified, overhead door closers and brackets shall be BHMA 689, to match other finish hardware in same room or space.

2.03 CYLINDERS AND KEYING

A. Project shall be keyed in accordance with keying schedule, prepared and furnished by the Owner's Representative.

B. Provide a cylinder security collar at each exterior door cylinder. Provide cylinder collars and spacers at all cylinders as needed to provide a neat, tight and secure fit of the cylinder to the locking hardware.

C. Permanent Cylinders:

1. Permanent cylinders shall be standard core type, 7-pins maximum.

   a. Permanent cylinders as manufactured by Schlage shall be Owner furnished. The Work of this section includes obtaining the permanent cylinders from the Owner, and pinning, stamping, and installing.

   b. Provide to the Owner's Representative an approved hardware schedule and floor plans. Owner's Representative shall return with keying added to the approved hardware schedule, bitting chart, and a complete sample set of permanent keys.

2. Permanent cylinders shall be pinned with third-party (e.g., "LAB") 0.005 inch increment pins.

3. Pin cylinders according to Owner's Representative furnished sample set of permanent keys, Owner's Representative -furnished bitting chart and Owner's Representative -furnished key schedule.

4. Change keys and master keys shall operate inside and outside cylinder on two cylinder locks, unless otherwise indicated.

5. Provide the set number of change key only stamped on cylinder faces.

D. Key Control:

1. Permanent cylinders and sample set of permanent keys shall be not used during the construction phase of the Project. Temporary construction cylinders and keys used

for securing the Work is included as part of the Work of this section and will not be provided by the Owner.

2. Upon Substantial Completion of the Work, sample set of original keys shall be returned to the Owner's Representative. Duplication of Owner keys, or retaining keys, is not permitted.

3. Provide four unstamped, uncut nickel silver key blanks per cylinder to the Owner's Representative prior to Substantial Completion. Key blanks shall be by the permanent cylinder manufacturer and of the same keyway as the sample set of permanent keys or keyway designated by Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Finish hardware shall be installed as specified in Finish Hardware Schedule.

1. Placement of Hardware: Finish hardware shall be installed as indicated on hardware placement sheets attached to end of this section.

2. Provide necessary screws, bolts, anchors, and fastenings, of required sizes and type for proper installation of hardware. Exposed screws shall have Phillips heads, and wood screws shall be fully threaded.

3. Fitting: Hardware shall be accurately fitted and, with exception of prime-coated butt hinges, bar-type coordinators, and flat astragals, shall be removed before finish painting is installed. Upon completion of finish painting and/or sealing, permanently install the hardware.

4. Door escutcheons and push plates shall be installed with stainless steel or bronze, oval, "Phillips Head", fully threaded screws, not less than 3/4 inch - No. 6.

5. Exit devices shall be mounted with non-ferrous sex nuts and fully threaded machine screws, except where through bolts engage outside trim of locking case.

6. Mullion strike shall be installed with fully threaded machine screws.

7. Door closer shall be installed for maximum degree of opening of each door.

8. Following shall be installed with sex nuts and fully threaded machine screws.

   a. Door closers.

   b. Door pulls.

9. Install exterior doorstops as required. On new concrete, stops shall be installed with 1/4-20 screws. Anchor plate shall be Trimco 1268, or equal. Floor stops shall not be located in the path of travel and shall be located no more than 4 inches from walls.

10. Kickplate:

    a. Kickplates shall be installed with screws at each corner, and screws evenly spaced along each side not more than 3 inches apart on centers.

    b. Except on wood doors, screws shall be undercut pan head.

11. Thresholds shall be installed with 1/4-20 screws, set in Pour-Roc or mastic per section 07 9200, and coped to trim.

12. Sound Seals and Weather stripping / Gasketing:

    a. A mounting screw shall be installed within 2 inches of cuts or corners of weather stripping and/or gasketing.

    b. Sound seals and weather stripping and/or gasketing shall be installed with No. 8 - 3/4 inch Tek Phillips pan head screws.

3.02 ADJUSTING AND CLEANING

A. Before Substantial Completion, hardware shall be cleaned and inspected. Where hardware is deemed defective, repair or replace as required.

B. Door Closers: Final adjustments shall be performed before Substantial Completion, with mechanical system balanced and in operation.

3.03 EXAMINATION

A. Upon completion of installation, verify correct installation of hardware, according to reviewed Hardware Schedule and Keying Schedule. Verify that finish hardware is in optimum working condition.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. Locksets, exit devices, and other hardware items are referenced in the following hardware sets for series, type and function. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Do not order material until submittal has been reviewed, stamped, and signed by Architect's door hardware consultant.

C. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule.

Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

3.06 LIST OF FINISH HARDWARE

Hardware Group No. 1

For use on Door #(s):

MP-4A MP-4B

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY		628	IVE
1	EA	REMOVABLE MULLION	KR4954		689	VON
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-EO		626	VON
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-NL-OP-110MD		626	VON
1	EA	MULLION STABILIZER	154		SP28	VON
1	EA	MULLION STORAGE KIT	MT54		689	VON
1	EA	MORTISE CYLINDER	MATCH EXISTING (MULLION)			SCH
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
2	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 DT		630	IVE
1	EA	DOOR PULL	VR910 NL		630	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH		689	LCN
2	EA	PA MOUNTING PLATE	4040XP-18PA AS REQ		689	LCN
2	EA	CUSH SHOE SUPPORT	4040XP-30 AS REQ		689	LCN
2	EA	BLADE STOP SPACER	4040XP-61 AS REQ		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	WEATHER STRIPPING	BY DR/FR SUPPLIER			
2	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

Hardware Group No. 2

For use on Door #(s):

MP-3A MP-13D MP-13I

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	BALANCE OF HARDWARE	ALL HARDWARE BY DR/FR SUPPLIER		

Hardware Group No. 3

For use on Door #(s):

MP-1B MP-1D MP-2A MP-5A MP-5B MP-7A
MP-13A MP-13B MP-14A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	BALANCE OF HARDWARE	REUSE ALL EXISTING HARDWARE		

Hardware Group No. 4

For use on Door #(s):
MP-1A MP-1C

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	BALANCE OF HARDWARE	REUSE ALL EXISTING HARDWARE		

Hardware Group No. 5

For use on Door #(s):
MP-4AA MP-4BA

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		628	IVE
1	EA	PANIC HARDWARE	CDSI-PA-AX-35A-NL-OP-388		626	VON
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
1	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 NL		630	IVE
1	EA	SURFACE CLOSER	4040XP EDA		689	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA AS REQ		689	LCN
1	EA	BLADE STOP SPACER	4040XP-61 AS REQ		689	LCN
1	EA	STOP	FS441/444 OR WS401/402 AS REQ		626	IVE
1	EA	CUSH SHOE SUPPORT	4040XP-30 AS REQ		689	LCN
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

5" MINIMUM STILE FOR HARDWARE SPECIFIED
FIELD TO VERIFY NEW HARDWARE IS COMPATIBLE WITH DOOR/FRAME CONDITIONS PRIOR TO PLACING ORDER

END OF SECTION

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
   1. Windows and doors.

1.3 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300.

1.5 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

C. Qualification Data: For installers.

D. Product Test Reports: For each types of glazing products specified.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Source Limitations for Glass: Obtain glazing products through one source from a single manufacturer for each glass type as practical.

C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

D. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.
   1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

E. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
   1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
   2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

F. Safety Glazing Products: Comply with requirements in CBC Section 2406.1.
   1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the manufacturer acceptable to authorities having jurisdiction, in compliance with CBC Section 2406.3.
   2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. GANA Publications:
      a. GANA's "Glazing Manual."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Manufacturers: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vitro. (formally PPG) (Basis of Design).
   2. Guardian.
   3. Pilkington.
   4. Visteon.
   5. Or equal.

2.2 GLASS PRODUCTS

A. Heat-Treated Float Glass (Safety Glass): ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
   1. For uncoated glass, comply with requirements for Condition A.
   2. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
   3. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated.
      a. Class II tempered safety glazing per CBC 2406.3 and Table 2406.2(1).

2.3 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of material complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

2.4 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:
   1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.5 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive.

2.6 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.7 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep system.
   3. Minimum required face or edge clearances.
   4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant where indicated.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 LOCK-STRIP GASKET GLAZING

A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system, unless otherwise indicated.

3.8 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

DIVISION 9

FINISHES

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Interior gypsum board.

B. Related Sections include the following:
   1. Division 9 Section "Tiling" for tile backer board installed as substrates for ceramic tile.
   2. Division 9 Section “Painting” for primers and finishes applied to gypsum board surfaces.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
   2. Finishes: Level 4 and 5 of gypsum board finish indicated for use in exposed locations. 4 by 4 foot sample.
      a. Finishes: For each finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
      b. Each finish indicated.
      c. Each areas such as walls, ceilings, and soffits.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gypsum board that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Interior Gypsum Board: Subject to compliance with requirements, provide products by one of the following:
   1. Georgia Pacific. (District Standard)
   2. USG Corporation.
   3. National Gypsum Company.
   4. Or equal.

B. Steel Trim Accessories: Subject to compliance with requirements, provide products by one of the following:
   1. USG Corporation.
   2. Amico.
   3. Or equal.

2.2 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.

B. Type X:
   1. Thickness: 5/8 inch for new work.
   2. Long Edges: Tapered.
   3. Products:
      a. Toughrock Fireguard X by Georgia Pacific.
      b. Type X by USG.
      c. Or equal.

C. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.
   1. Core: 5/8 inch, Type X.
   2. Use: Toilet rooms and janitor's closets walls with painted finish.
      a. DensArmor Interior Guard by Georgia Pacific.
      b. USG Mold Tough Firecode Core Gypsum Panels by USG.
      c. XP Wallboard by National Gypsum.
      d. Or equal.

2.4 TRIM ACCESSORIES

A. Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:
      a. Cornerbead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.
      g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim and Reveal: As specified in Division 9 Section "Portland Cement Plaster".

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Acoustical Sealant: Sheetrock Acoustical Sealant by USG or equal.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

D. Thermal and Acoustical Insulation: As specified in Division 7 Section "Building Insulation."

E. Gypsum Board Adhesives:
   1. High performance latex-based construction adhesive designed for gypsum board applications.
   2. Adhesives shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.
   3. Products:
      a. Green Series SW-325 Shear & Drywall Adhesive by OSI.
      b. Drywall Adhesive GDWA by Grabberman.
      c. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners, unless otherwise indicated.
   2. LC-Bead: Use at exposed panel edges.
   3. L-Bead: Use where indicated.
   4. U-Bead: Use at exposed panel edges.
   5. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.4 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Comply with GA 214 for Level definitions.
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for ceramic tile or acoustical tile.
   3. Level 3: Where indicated on Drawings.
   4. Level 4: At panel surfaces that will be exposed to view with flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.
   5. Level 5: At panel surfaces that will be exposed to view with non-flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Ceramic tile.
   2. Cementitious backer units installed as part of tile installations.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
   1. Propose locations of expansion, contraction, control, and isolation joints if not indicated on Drawings.

C. Installation Method: Show TCA installation method number for each tiled area in tabulated form.

D. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

E. Product Certificates: For each type of product, signed by product manufacturer.

F. Qualification Data: For Installer.

G. Material Test Reports: For each tile-setting and -grouting product.

1.5 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.
   1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

D. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of ceramic tile and accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceramic Tile: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Daltile; Div. of Dal-Tile International Inc.
   2. Crossville Ceramics Company, L.P.
   3. Interceramic.
   4. Bedrosians.
   5. Emser Tile.
   6. Or equal.

B. Setting, Grouting Materials: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Custom Building Products.
   2. LATICRETE International Inc.
   3. MAPEI Corporation.
   4. Sienna.
   5. Tec by H.B. Fuller.
   6. Or equal.

C. Sheet Waterproofing for Tile Installation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Noble Company (The); Nobleseal TS. (Basis of Design)
   2. Schluter; KERDI XL.
   3. Or equal.

D. Cementitious Backer Board: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. USG Corporation; DUROCK Cement Board.
   2. National Gypsum Company; PermaBase.
   3. C-Cure; C-Cure Board 990.
   4. Custom Building Products; Wonderboard.
   5. Or equal.

E. Metal Edge Strips and Transitions: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Schluter Systems (Basis of Design).
   2. Blanke.
   3. Or equal.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

C. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 TILE PRODUCTS

A. Semi-Gloss Ceramic Wall Tile: Semi Gloss Series.

B. Color: As selected by Architect from manufacturer’s full range.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
   1. Vendor: White Georgia Marble Co.
   2. Description: Match Architect's sample.

2.5 SHEET WATERPROOFING FOR TILE INSTALLATIONS

A. General: Manufacturer's standard product that complies with ANSI A118.10.

B. Thin (1/32 inch) bonded, load bearing sheet membrane for waterproofing. Alloy made from Chlorinated Polyethylene (CPE) with nonwoven fabric laminated to both sides.
   1. System Performance: 1-14 “Extra Heavy Service” cycles per ASTM C627.
   2. Hardness: 82 shore A per ASTM D2240.
   3. Tensile Strength: 1600 psi per ASTM D412 Die C.
   4. Elongation: 44% per ASTM D412 Die C.
   5. Tear Strength: 400 psi per ASTM D624 Die C.
   6. Shear Strength: Pass per ANSI A118.10-1993.
   7. Shear Strength - Water Immersion: Pass per ANSI A118.10-1993.
   8. Fungus & microorganism Resistance: Pass per ANSI A118.10-1993.
   9. Seam Strength: Pass per ANSI A118.10-1993.
   10. Waterproofness: Pass per ANSI A118.10-1993.

C. Product: Ditra XL System by Schluter or equal.

1. Description: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on underside; 5/16-inch nominal thickness.
2. Accessories:
   a. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness. Kerdi-Band and Kerdi-Flex by Schluter or equal.

2.6 SETTING AND GROUTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:
   1. Prepackaged dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive.
      a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
   2. Products:
      a. MAPEI: Ultraflex 2, Walls: MAPEI Ultralite.
      b. 254 Platinum by Laticrete.
      c. Custom Building Products: MegaFlex.
      d. Or equal.

B. Chemical-Resistant, Water-Cleanable, Grouting Epoxy: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   1. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F and 212 deg F, respectively, and certified by manufacturer for intended use.
   2. Products:
      a. MAPEI: Kerapoxy IEG.
      b. SpectraLock Pro by Laticrete.
      c. Custom Building Products: 100% Solids Epoxy Grout.
      d. Or equal.

2.7 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section "Joint Sealants."
   1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.8 TILE BACKER UNITS

A. Cementitious Back Units:
   1. Aggregated portland cement board with coated glass-mesh reinforcement scrim.
   2. Comply with ANSI A118.9.
   3. Pass ASTM E136 for non-combustibility.

4. Thickness: As indicated on Drawings.
5. Lengths: Maximum lengths available to minimize end-to-end butt joints.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.10 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
      a. Sub-floor and Vertical Surfaces: 1/4 inch in 10 feet.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
   1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
   2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Locate joints in tile surfaces directly above joints in concrete substrates.

G. Grout tile to comply with requirements of the following tile installation standards:
   1. For chemical-resistant epoxy grouts, comply with ANSI A108.6.

3.4 CEMENTITIOUS BACKER UNIT INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 WATERPROOFING INSTALLATION

A. Do not install tile over waterproofing until waterproofing has been tested to determine that it is watertight.

3.6 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

B. Joint Widths: 1/16 inch unless specified otherwise.

3.7 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

3.8 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove epoxy grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.9 WALL TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior wall installation over cementitious backer units; thin-set mortar; TCA W244C-07 with epoxy grout and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

3.10 FLOOR TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior floor installation on waterproof membrane over concrete; thin-set mortar; TCNA F122 and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

END OF SECTION 093000

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes acoustical tiles for ceilings and the following:
   1. Direct attachment of tiles to substrates with adhesive.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light-Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For components with factory-applied color finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
   1. Acoustical Tile: Set of full-size Samples of each type, color, pattern, and texture.
   2. Concealed Suspension System Members: 12-inch- long Sample of each type.
   3. Exposed Moldings and Trim: Set of 12-inch- long Samples of each type and color.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical tile ceiling.

E. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:
1. Surface-Burning Characteristics: Provide acoustical tile with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
a. Smoke-Developed Index: 450 or less.
b. Flame-Spread Classification: CBC 802.2 and Table 8-A.
1) Flame-Spread Rating: Class 1 (0-25).

D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand meeting the requirements of ASCE 7 Section 13.5.6.2 as modified by 2019 CBC Section 1617A.1.21.

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical tile ceilings that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acoustical Tiles: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. USG Interiors, Inc. (District Standard)

2.2 ACOUSTICAL TILES, GENERAL

A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
   1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

D. Antimicrobial Fungicide Treatment: Provide acoustical tiles with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

A. Products: Match existing acoustical panels as approved by Architect.

2.4 MISCELLANEOUS MATERIALS

A. Tile Adhesive: Type recommended by tile manufacturer, bearing UL label for Class 0-25 flame spread.
   1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, DIRECTLY ATTACHED ACOUSTICAL TILE CEILINGS

A. Adhesive Installation: Install acoustical tile by bonding to substrate, using amount of adhesive and procedure recommended in writing by tile manufacturer, CISCA Ceiling System Handbook and as follows:
   1. Remove loose dust from backs of tiles by brushing and prime them with a thin coat of adhesive.
   2. Install splines in joints between tiles; maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet and not exceeding 1/4 inch cumulatively.
   3. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.
   4. Do not bend tile during installation. The "spring load" will cause the adhesive to release.

B. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.

C. Arrange directionally patterned acoustical tiles as follows:
   1. As indicated on reflected ceiling plans.

3.4 CLEANING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Luxury Vinyl Tile (LVT).
   2. Resilient wall base and accessories.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for concrete surface testing.
   2. Division 7 Section “Concrete Moisture and Alkalinity Barrier” for concrete surface preparation.

1.3 PERFORMANCE REQUIREMENTS

A. Accessibility Requirements for Resilient Flooring:
   1. Resilient Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include concrete moisture and alkalinity limits.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification:
   1. Full-size units of each color and pattern of resilient floor tile required.
   2. Resilient Wall Base and Accessories: Manufacturer's standard-size Samples, but not less than 12 inches long, of each resilient product color and pattern required.

D. Maintenance Data: For resilient products to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store tiles on flat surfaces.

1.7 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

E. Install resilient products after other finishing operations, including painting, have been completed.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of resilient floor tile that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
   2. Resilient Wall Base and Accessories: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Luxury Vinyl Tile (LVT): Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Mohawk Group. (District Standard)

B. Type TP Resilient Wall Base: Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
   1. Johnsonite. (Basis of Design)
   2. Burke Mercer Flooring Products.
   3. Allstate Rubber.
   4. Armstrong.
   5. Or equal.

2.2 LUXURY VINYL TILE (LVT)

A. Product: Mohawk or equal.
   1. Collection and Style: As indicated on Drawings.
   2. Construction: Commercial luxury vinyl tileclass / ASTM F1700 class III, type B.
   3. Edge profile: square.
   4. Installation: direct glue.
   5. Recommended adhesive: Shaw 4100, s150 or Shaw 4151.
   6. Performance and Testing:
      a. Static load (ASTM F970): Passes (modified), *1000 PSI.
      b. Residual indentation (ASTM F1914): Passes.
      c. Resistance to heat (ASTM F1514): Passes.
      d. Resistance to light (ASTM F1515): Passes.
      e. Resistance to chemicals (ASTM F925): Passes.
      f. Smoke density (ASTM E662, flaming mode): Passes.
      g. Radiant panel (ASTM E648): Passes, class I.

2.3 RESILIENT WALL BASE

A. Product: Type TP Perceptions Resilient Wall Base by Johnsonite or equal.
   1. Manufactured from a proprietary thermoplastic rubber formulation.
   2. Meets performance requirements for ASTM F 1861 Standard Specification for Resilient Wall Base, Type TP, Group 1.
   3. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm2 or greater, Class I.
   4. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class A, Smoke <450.
   5. Thickness: 1/8" (3.2mm).
   6. Style and Colors: As selected by Architect from manufacturer's full range.

2.4 RESILIENT MOLDING ACCESSORY

A. Types:
   1. Reducer strip for resilient floor covering
   2. Joiner for tile and carpet.

B. Material: Rubber.

C. Profile and Dimensions: As indicated.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed resilient tile and as recommended/ required by the manufacturer for warrantee acceptance or provided by resilient tile manufacturer for the type of carpet being installed.
   1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. VCT and Asphalt Tile Adhesives: 50 g/L.
      b. Cove Base Adhesives: 50 g/L.
      c. Rubber Floor Adhesives: 60 g/L.

C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Concrete Substrates:

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Independent moisture and alkalinity testing prior to installation of resilient flooring as specified in Division 7 Section "Concrete Moisture and Alkalinity Testing".
3. Provide barrier as specified in Division 7 Section "Concrete Moisture and Alkalinity Barrier" if test exceed floor covering limits.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
1. Do not install resilient products until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

D. Extend tiles into toe spaces, door reveals, closets, and similar openings.

E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

F. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
   2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.5 RESILIENT ACCESSORY INSTALLATION

A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.6 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.
      a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
   1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
      a. Use commercially available product acceptable to manufacturer.
   2. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 096519

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Surface Preparation.
   2. Field application of paints, stains, varnishes, and other coatings.

1.3 SUBMITTALS

A. Product data - Submit product data sheets for each product.

B. Samples:
   1. Submit two painted samples, illustrating selected colors and textures for each color and systems selected with specified coats cascaded.
   2. Submit on suitable backing, 8x10 inch size.

1.4 QUALITY ASSURANCE

A. Painting Contractor is required to attend a pre-construction meeting with the District prior to commencement of all projects.

1.5 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

C. Environment Requirements:
   1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.
   2. Do not paint when there is a threat of rain within 24 hours or when surface or air temperatures are at or below 40 degrees.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace paint that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

1.8 EXTRA STOCK

A. Minimum 1 gallon each product in original or new 1 gallon cans.
   1. Color spot each lid.
   2. Identify with formula, location, product and date.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paints: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vista Paint. (District Standard)

2.2 PAINTS AND COATINGS

A. Ready mixed, except field-catalyzed coatings.

B. Prepare pigments:
   1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogenous coating.
   2. For good flow and brushing properties.
   3. Capable of drying or curing free of streaks or sags.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Do not proceed unless substrate is suitable.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent
   3. Interior Wood: 15 percent, measured in accordance with ASTMD4442.
   4. Exterior Wood: 15 percent, measured in accordance with ASTMD4442.

3.2 PREPARATION OF SURFACE

A. General:
   1. Clean all exterior walls and surfaces of loose and scaly paint, dirt, dust, chalk, and other foreign matter by water-blasting using care not to damage substrate followed by hand scraping, sanding or wire brushing after surfaces are dry. Mildew must be treated with household bleach solution and rinsed thoroughly.
   2. Patch, caulk, set protruding nails and repair all surfaces and cracks where necessary with suitable patching materials and smooth off to match adjacent surfaces.
   3. Sand Glossy surfaces to dull surface and remove residue.
   4. Remove mildew from affected surfaces with a solution of Tri-Sodium Phosphate and bleach. Rinse with clean water and allow to dry completely.
   5. Existing surfaces to be recoated shall be thoroughly cleaned and de-glossed by sanding or other means prior to priming and painting. Patched and bare areas shall be spot primed with the same primer as specified for new work.
   6. Rusty metal: Scrape, sand or wire wheel, feathering edges to sound coating. Dust surfaces. Topcoat.
   7. Remove soil and body oils completely from surfaces, including handrails, door edges and posts. Treat with Liquid Sandpaper or Dull-N-Bond.
   8. Remove hardware, accessories, plates, fixtures and similar items not to be finished. Reinstall at completion.
   9. Paint edges of sink cut-outs.

B. CMU Surfaces:
   1. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete block surfaces which are to be painted.
   2. Unpainted CMU surfaces shall be cleaned with TSP. Rinse thoroughly. Surface shall be tested for adhesion. Prime as listed in materials section; allow to cure, then perform adhesion test with duct tape.

C. Galvanized Surfaces: Remove all oils and contamination from galvanized surfaces scheduled to be painted by washing with a compliant solvent wash.

D. Ferrous Metal: Remove grease, rust, scale, dirt and dust from ferrous metal surfaces. Primer coat shall be applied not less than 30 minutes, nor more than 3 hours after preparation of surface.

E. Primed Metal: Sand and scrape shop primed metal to remove loose primer and rust. Touch-up bare, abraded and damaged areas with metal primer. Feather edges to make touch-up patches inconspicuous.

F. Wood Surfaces:
1. Remove dust, grit and foreign matter from wood surfaces. Sand surfaces and dust clean. Spot prime knots, pitch streaks and sappy sections with a stain blocking primer where surfaces are to be painted. Fill nail holes, cracks and other defects after priming and spot prime repairs after patching material has fully cured.
2. Wood surfaces with peeling areas are to have edges of broken paint film sanded to a feather edge.
3. Back prime wood trim. Paint tops, bottoms, edges and cut-outs of doors.

G. Plaster Surfaces:
1. Plaster surfaces shall be dry and free from efflorescence, encrustations and foreign matter. Fill cracks, holes and imperfections, smoothing repairs to match adjacent texture. Allow repairs to fully cure before priming.
2. Prime plaster surfaces with specified primer. Caulk all cracks.

H. Gypsum Board: Gypsum board shall be dusted clean and free from encrustations and other foreign matter.

I. Preparation of other surfaces shall be performed following specific recommendations of the coating manufacturer.

3.3 PREVISOUSLY COATED SURFACES

A. Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required per ASTM D4259.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved

E. Sand wood surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust particles just prior to applying next coat.

G. Stipple all edges and corners to conceal brush marks.

H. Paint entire trim element with like color. Painting of faces only is unacceptable. Trim surfaces must be wrapped with the trim color and not "faced off" or "Hollywooded".

I. Doors: Paint entire door unless otherwise noted, including door top and bottom edge surfaces.

J. Tinting: Tint each primer a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint primer to match the color of the finish coat, but provide sufficient differences in shade of primer to distinguish each separate coat.

3.5 PROTECTION

A. Protect work of other trades and items not intended to receive paint. Install "wet paint" signs to protect newly painted surfaces.

3.6 CLEANING

A. Protection - Carefully protect areas where work is in progress from damage.
   1. Provide and spread clean drop cloths when and where required to provide the necessary protection.
   2. Immediately clean-up all accidental spatter, spillage, misplaced paint and restore the affected surface to its original condition.

B. Clean-up:
   1. Clean up debris daily per OSHA requirements.
   2. At completion of work, remove all materials, supplies, debris and rubbish and leave each area in a clean, acceptable condition.
   3. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.7 SURFACES TO BE FINISHED

A. Paint all new work and areas affected by new work, unless noted otherwise.

B. Do not paint or finish the following items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.

C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint shop primed items occurring in finished areas.
   3. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint.
   4. Paint dampers exposed behind louvers, grilles and convector and baseboard cabinets to match face panels.

3.8 PAINT SYSTEMS – EXTERIOR

A. CONCRETE – PLASTER – STUCCO
   1. FLAT: Premium Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 3000 Acribond (100% Acrylic Solid Stain)
      c. Third Coat 3000 Acribond (100% Acrylic Solid Stain)
   2. FLAT ELASTOMERIC: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 500 Solotex Multi-Mil Acrylic Elastomeric
      c. Third Coat 500 Solotex Multi-Mil Acrylic Elastomeric
   3. EGGSHELL ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
   4. SEMI-GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
      c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   5. GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8500 Carefree Gloss (100% Acrylic)
      c. Third Coat 8500 Carefree Gloss (100% Acrylic)

B. METAL: FERROUS (Unprimed)
   1. FLAT: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 2000 Duratone (100% Acrylic)
      c. Third Coat 2000 Duratone (100% Acrylic)
   2. EGGSHELL ENAMEL : Water-based Acrylic : Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat 8300 Carefree Eggshell (100% Acrylic)
   3. EGGSHELL ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
      a. First Coat 9600 Protec Metal Primer
      b. Second Coat 9700 Protec Alkyd Emulsion Satin
      c. Third Coat 9700 Protec Alkyd Emulsion Satin
   4. SEMI-GLOSS ENAMEL: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)

c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)

5. SEMI-GLOSS ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9800 Protec Alkyd Emulsion Semi-Gloss
   c. Third Coat 9800 Protec Alkyd Emulsion Semi-Gloss
6. GLOSS ENAMEL : Water-based Acrylic: Premium Plus Quality
   a. First Coat 9600 Protec Metal Prime
   b. Second Coat 8500 Carefree Gloss (100% Acrylic)
   c. Third Coat 8500 Carefree Gloss (100% Acrylic)
7. GLOSS ENAMEL : Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9900 Protec Alkyd Emulsion Gloss
   c. Third Coat 9900 Protec Alkyd Emulsion Gloss

C. METAL: NON-FERROUS (Unprimed)
1. FLAT: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 2000 Duratone (100% Acrylic)
   d. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   d. Third Coat 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   d. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8500 Carefree Gloss (100% Acrylic)
   d. Third Coat 8500 Carefree Gloss (100% Acrylic)

D. WOOD
1. FLAT: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 2000 Duratone (100% Acrylic)
   c. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS ENAMEL: Premium Plus Quality

a. First Coat 4200 Terminator II (100% Acrylic Primer)
b. Second Coat 8500 Carefree Gloss (100% Acrylic)
c. Third Coat 8500 Carefree Gloss (100% Acrylic)

E. CONCRETE – ASPHALT – LINE STRIPING
1. FLAT:
a. First Coat 6700 ON-LINE Flat Traffic Marking Paint
b. Second Coat 6700 ON-LINE Flat Traffic Marking Paint
2. SEMI-GLOSS ENAMEL:
a. First Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
b. Second Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
3. FLAT W/ REFLECTIVE BEADS: QUICK-DRY
a. First Coat 6900 ON-LINE Flat QD Traffic Marking Paint
b. Second Coat 6900 ON-LINE Flat QD Traffic Marking Paint

3.9 PAINT SYSTEMS – INTERIOR (Premium Low or Zero VOC)

A. Gypsum Board Surfaces (Drywall) Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

B. Gypsum Board Surfaces (Drywall) 100% Acrylic Low-Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

C. Gypsum Board Surfaces (Drywall) 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

D. Gypsum Board Surfaces (Drywall) 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

E. Concrete, Plaster, Masonry – Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

F. Concrete, Plaster, Masonry – 100% Acrylic Low Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

G. Concrete, Plaster, Masonry – 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer

2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

H. Concrete, Plaster, Masonry – 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

I. Concrete Masonry Unit (CMU) Acrylic Flat Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

J. Concrete Masonry Unit (CMU) 100% Acrylic Low Sheen Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

K. Concrete Masonry Unit (CMU) 100% Acrylic Eggshell Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

L. Concrete Masonry Unit (CMU) 100% Acrylic Semi-Gloss Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

M. Wood – 100% Acrylic Low-Sheen Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

N. Wood – 100% Acrylic Eggshell Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

O. Wood – 100% Acrylic Semi-Gloss Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

P. Metal: Ferrous – Water Base Alkyd Semi-Gloss Finish
1. First Coat: 9600 Protec Alkyd Emulsion Metal Primer
2. Second Coat: 9800 Protec Semi-Gloss Finish
3. Third Coat: 9800 Protec Semi-Gloss Finish

Q. Metal: Non-Ferrous (Galvanized) Water Base Alkyd Semi-Gloss Finish
1. Pretreatment: Krud Kutter Metal Clean and Etch

2. First Coat: 4800 Metal Pro Acrylic Metal Primer
3. Second Coat: 9800 Protec Semi-Gloss Finish
4. Third Coat: 9800 Protec Semi-Gloss Finish

3.10 COLORS

A. To be selected by Architect from manufacturer's full range of colors.

END OF SECTION 099100

DIVISION 10

SPECIALTIES

SECTION 101100 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Markerboards.
   2. Tackboards.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Show location of panel joints.
   2. Show location of special-purpose graphics for visual display surfaces.
   3. Include sections of typical trim members.

C. Schedule: List product, size, and type by room numbers.

D. Samples for Initial Selection: For each type of visual display surface indicated and as follows:
   1. Actual sections of face sheet and tack assembly.
   2. Samples of accessories involving color selection.

E. Samples for Verification: For each type of visual display surface indicated and as follows:
   1. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
   2. Trim: 6-inch- long sections of each trim profile.
   3. Accessories: Full-size Sample of each type of accessory.

F. Maintenance Data: For visual display surfaces to include in maintenance manuals.

G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of visual display surfaces and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

B. Fire-Test-Response Characteristics: Provide fabrics with the surface-burning characteristics indicated, as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-built visual display boards, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store visual display units vertically with packing materials between each unit.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating visual display surfaces without field measurements. Coordinate wall construction to ensure that actual dimensions correspond to established dimensions.
   2. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.7 WARRANTY

A. Special Warranty for Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace face sheets that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Surfaces lose original writing and erasing qualities.
      b. Surfaces become slick or shiny.
      c. Surfaces exhibit crazing, cracking, or flaking.
   2. Warranty Period: Life of the building.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Markerboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. LCS Markerboard by Claridge Products & Equipment, Inc. (Basis of Design).
   2. 555 Series, P3 ceramic steel by Polyvision Corporation.
   3. Magnaboard by Chatfield Clarke Co.
   4. Modular Trim System by Platinum Visual Systems.
   5. A-1 Visual Systems.
   6. Best-Rite.
   7. Or equal.

B. Tackboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Koroseal. (District Standard)

2.2 MARKERBOARDS

A. Product: Markerboard by Claridge Products & Equipment, Inc.
   1. Face Sheet: 24 gauge, white.
      a. LCS-II, 75 low gloss; dry-erase markers wipe clean with dry cloth or standard eraser. Suitable for use as projection screen.
   2. Core Material: 7/16” MDF unless fire retardant materials are required, then provide 7/16 inch Duracore.
   3. Panel Backing: Moisture barrier back; 0.002” Aluminum Foil Panel.
   4. Metal Frame/Trim: Series #4, 5/8 inch trim face.
      a. Extruded aluminum, alloy 6063, clear anodized finish.
      b. Trim for three sides: Side trim with narrow leg exposed and mitered at corners.
      c. Chalk trough: Outer end corners rounded to approximately 1-1/2 inches radius.
   5. Size: As indicated on Drawings.
   6. Maprail: 74EZ, 2 inch.

2.3 TACK BOARD

A. Product: tac•wall by Koroseal or equal.
   1. Description: Resilient, tackable, linoleum surface material. Uni-color resilient homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing.
   2. Width: 48 inch.
   3. Gauge: 1/4 inch.
   4. Roll: Approximately ± 95 lineal foot rolls.
   5. Flexible enough to bend around a 2-3/4 inch radius.
   6. Dimensionally stable due to burlap backing.
   7. Meets California Indoor Air Quality Specifications 01350.
   8. Color: Color shall extend through thickness of material.

a. As selected by Architect from manufacturer's full range.
9. Size: As indicated on Drawings.

B. Aluminum Trim: 1/4 inch clear satin, anodized aluminum.
1. 5/16 inch face J Trim.
2. 1/2 inch face H Trim.
3. 5/16 inch face Outside Trim.
4. 5/16 inch face Inside Trim

C. Accessories:
1. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) or polyvinyl acetate dispersion type (contact adhesive) when used in a press.
2. Caulk: Color matched to tackable wall.

2.4 ACCESSORIES

A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- thick, extruded aluminum; of size and shape indicated.
1. Factory-Applied Trim: Manufacturer's standard.

B. Chalktray: Manufacturer's standard, continuous.
1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.

C. Map Rail: Provide the following accessories:
1. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches wide.
2. End Stops: Located at each end of map rail.
3. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches of map rail or fraction thereof.
4. Flag Holder: One for each room.

2.5 FABRICATION

A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.

B. Visual Display Boards: Factory assemble visual display boards, unless otherwise indicated.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.

3. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

D. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to neat, hairline closure.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.6 ALUMINUM FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

D. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Examine walls and partitions for proper backing for visual display surfaces.

C. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.

B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.

3.3 INSTALLATION, GENERAL

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation. Units shall be braced in place to allow curing of adhesive. There shall be no gaps or voids in adhesion and units shall not give when pushed.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

A. Visual Display Boards: Visual Display Boards shall be attached to the wall by spreading adhesive over the entire back of the panel with 1/4 inch notched trowel. Panels shall be braced to provide thorough adhesion to the substrate, and shall exhibit no “sponginess” when pressed.

3.5 CLEANING AND PROTECTION

A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 101100

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Panel signs (room signs).
2. Parking signs.
3. Traffic signs.
4. Exterior building signs.
5. Signage accessories.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
1. Raised characters shall comply with CBC Section 11B-703.2.:
   a. Depth: It shall be 1/32 inch (0.8 mm) minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
   b. Height: It shall be 5/8 inch (15.9 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter “I”. CBC Section 11B-703.2.5.
   c. Finish and contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1
   d. Proportions: It shall be selected from fonts where the width of the uppercase letter “O” is 60 % minimum and 110 % maximum of the height of the uppercase letter “I”. Stroke thickness of the uppercase letter “I” shall be 15 % maximum of the height of the character. CBC Sections 11B-703.2.4.
   e. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8.
   f. Braille: It shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4. Braille dots shall have a domed and rounded shape and shall comply with CBC Table and Figure 11B-703.3.1.
   g. Mounting height: A tactile sign shall be located 48” minimum to the baseline of the lowest Braille cells and 60” maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
   h. Mounting location: A tactile sign shall be located on the approach side, as one enters or exits rooms or space, and be reached within 0” of the required clear floor space per CBC Section and Figure 11B -703.4.2 as follows:

1) a clear floor space of 18' x 18" minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
2) on the wall at the latch side of a single door.
3) on the inactive leaf of a double door with one active leaf.
4) on the wall at the right side of a double door with two active leafs.
5) on the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leafs.

2. Visual characters shall comply with CBC Section 11B-703.5 and shall be 40" minimum above finish floor or ground.
3. Pictograms shall comply with CBC Section 11B-703.6.
4. Symbol of accessibility shall comply with CBC Section 11B-703.7.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
1. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.

D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:
1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will not be returned for installation into Project.

E. Qualification Data: For Installer.

F. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.

B. Source Limitations: Obtain each sign type through one source from a single manufacturer.

C. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

D. All tactile signage must be field inspected after installation per CBC 11B-703.1.1.2.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
   1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signage fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Best Sign Systems Inc. (Basis of Design)
   2. Apco Graphics Inc.
   3. ASI Sign Systems, Inc.
   4. Curcio Enterprises, Inc.
   5. Mohawk Sign Systems.
   6. Sign A Rama.
   7. Or equal.

B. Exterior Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Gemini, Inc. (Basis of Design)
   2. A.R.K. Ramos Mfg. Co., Inc.
   3. La Haye Bronze.
   4. Metal Arts; Division of L & H Mfg.
   5. Mills Manufacturing. Inc.
   6. Southwell Co.
   7. Or equal.

2.2 PANEL ROOM SIGNS

A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
   1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.

B. Product: HC300 ADA Sign System by Best Sign Systems.
   1. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished.
   2. No Smoking signs.
   3. Room, Occupancy, Wayfinding Signs: As selected from 4 standard copy size signs.
      a. 4" x 2" with up to 4 characters each.
      b. 6" x 2" with up to 8 characters each.
      c. 8" x 2" with up to 12 characters each.
      d. 10" x 2" with up to 14 characters each.
   4. Toilet Room Signs: As selected from manufacturer's standard.
   5. Symbols of Accessibility: Provide 6-inch- high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.
   6. Material:
      a. 1/4 inch thick (thicker than standard) "MP", acrylic sheet, ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
   7. Copy: Contracted grade 2 Braille all capital letter on tactile sign.
      a. Font and Size: As indicated on Drawings.

2.3 PARKING/TRAFFIC SIGNS

A. Material: 0.080" porcelain-enameled aluminum unframed signs, screen printed copy.

B. Accessible signs are blue with white symbol.
   1. Text: Symbols of accessibility, accessible direction, etc. as indicated on Drawings.
   2. Text: Stop, Yield, Do Not Enter, etc. as indicated on Drawings.

C. Post: 2 inch diameter, schedule 40 galvanized pipe.

2.4 EXTERIOR BUILDING SIGN

A. Cast metal letters: Melted metal alloy poured into a mold. The backside is hollow.

B. Size and letters: As indicated on Drawings.

2.5 ACCESSORIES

A. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
   2. Signs placed on glazed surfaces, backing sign of the same material and color shall be applied on the opposite glazed surface.

B. Wall-Mounted Panel Signs:
   1. Interior Signs on Smooth Substrates:
      a. Silicone-Adhesive Mounting: Use liquid-silicone adhesive recommended in writing by sign manufacturer to attach signs to irregular, porous, or vinyl-covered surfaces.

Use double-sided vinyl tape where recommended in writing by sign manufacturer to hold sign in place until adhesive has fully cured.

2. Exterior and Interior Signs on Rough Substrates:
   a. Mechanical Fasteners: Mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
      1) Fastener: Stainless steel screws, tamper-resistant flat head countersink.
      2) Anchors: Suitable for secure attachment to substrate.

C. Parking and Traffic Signs
   1. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
   2. Install sign level, plumb, and at height indicated.
   3. Cap post with galvanized cap.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by District.

END OF SECTION 101400

SECTION 102800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Toilet accessories.

B. Owner-Furnished Contractor Install Materials: As indicated on Drawings.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Elements of Sanitary facilities shall be mounted at locations in compliance with CBC Sections 11B-602 through 11B-612.
   2. Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609.
   3. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follows:
      a. 1-1/2” between the grab bar and the wall.
      b. 1-1/2” minimum between the grab bar and projecting objects below and at the ends.
      c. 12” minimum between the grab bar and projecting objects above.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated on Drawings.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in California Electrical Code, NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace toilet and bath accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Toilet and Bath Accessories: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Bobrick Washroom Equipment, Inc. (District Standard)

B. Underlavatory Guards: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Handy-Shield by Plumberex Specialty Products, Inc. (Basis of Design)
   2. IPS Corp.
   3. TCI Products.
   4. Truebro, Inc.
   5. Or equal.

2.2 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.

C. Galvanized Steel Sheet: ASTM A 653, with G60 hot-dip zinc coating.

D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.3 TOILET ACCESSORIES

A. As indicated on Drawings.

2.4 UNDERLAVATORY GUARDS

A. Product: Handy-Shield Maxx by Plumberex Specialty Products, Inc. or equal.
   1. Description: Insulating pipe covering for supply and drain piping assemblies, that prevent direct contact with and burns from piping, and allow service access without removing coverings.
   2. PVC insulator shall be 1/8" thick.
   3. Meets Testing Standard ASTM E 84-07 per CBC Chapter 8.
      a. 25 flame spread.
      b. 450 smoke index.
   4. Surfaces to be soft, smooth, non-absorbent, easy to clean U/V inhibited, antimicrobial, antifungal properties.
   5. Insulator shall have a dual fastening system which consists of fusion bonded Velcro fastener strips for full slit enclosure and tamper resistant, smooth, non-abrasive snap-locking fasteners.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate OFCI items with District.

B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

C. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 104400 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable fire extinguishers.
   2. Fire-protection cabinets for the following:
      a. Portable fire extinguishers.
   3. Mounting brackets for fire extinguishers.

1.3 SYSTEM DESCRIPTION

A. Fire Extinguisher Cabinets:
   1. Fire Extinguisher Cabinets must comply with CBC Sections11B-305, 11B-307, 11B-308, and 11B-309.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.
   1. Fire Extinguishers: Include rating and classification.
   2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Samples for Initial Selection: For fire-protection cabinets with factory-applied color finishes.

C. Samples for Verification: For each type of exposed factory-applied color finish required for fire-protection cabinets, prepared on Samples of size indicated below.
   1. Size: 6 by 6 inches square.

D. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10-1998 Edition, "Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
   1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure of hydrostatic test according to NFPA 10.
      b. Faulty operation of valves or release levers.
   2. Warranty Period: 6 years.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fire Extinguishers and Cabinets: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. JL Industries, Inc. (Basis of Design)
   2. Larsen's Manufacturing Company.
   3. Potter Roemer; Div. of Smith Industries, Inc.
   4. Ansul.
   5. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B.

B. Stainless-Steel Sheet: ASTM A 666, Type 304.

C. Tempered Break Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick minimum.

2.3 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
   1. Valves: Manufacturer's standard.
   2. Handles and Levers: Manufacturer's standard.
   3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
   4. Certification Tag: Provide fire extinguisher with valid certification test tag where fire extinguishers are fully charged and ready to be used.

B. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-10B:C, UL rated.
   2. Nominal Capacity: Provide largest capacity fire extinguisher that will fit in the cabinet, but 5 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: General purpose.

C. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-20B:C.
   2. Nominal Capacity: Provide largest capacity fire extinguisher but 10 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: At mechanical rooms and where indicated.

D. Wet Chemical Type: Cast steel tank, pressurized, including hose and nozzle, with bracket.
   1. Class 2A-K.
   2. Size 2.5 gal.
   3. Finish: Factory baked enamel, red color.
   4. Use: At kitchens.

2.4 FIRE-PROTECTION CABINET

A. Product: Cosmopolitan series - stainless steel fire extinguisher cabinet by JL.
   1. Door and Trim Construction: No. 4 stainless steel. Flush cabinet doors with a 5/8" door stop are attached by a continuous hinge and equipped with zinc-plated handle and roller catch.
   2. Trim Style and Depth: Provide semi-recessed where recessed can’t be provided.
      a. Recessed: 3/8" flat trim.
      b. Semi-Recessed: 1-1/4", 1-1/2" Square Edge or 2-1/2", 3", 4" (recessed pull), 4-1/2" Rolled Edge.
   3. Finish: #4 Stainless Steel.
   4. Tub: Constructed of cold rolled steel with white powder-coat finish standard. Surface mount tubs are No 4 stainless.
   5. Fire-Rated: At fire-rated assembly.
   6. Door Styles: View Door Styles at Right.
   7. Door Glazing: Tempered Glass.

2.5 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   1. Color: Red.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter.
      a. Orientation: Vertical.

2.6 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
   1. Weld joints and grind smooth.
   2. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material.
      a. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
   1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
   2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 STAINLESS-STEEL FINISHES

A. General: Remove tool and die marks and stretch lines or blend into finish.
   1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Bright, Directional Polish: No. 4 finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where cabinets will be installed.

B. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged units.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for recessed and semi-recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights indicated on Drawings.

B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
   1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire-protection cabinets.
   2. Provide inside latch and lock for break-glass panels.
   3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104400

DIVISION 11
EQUIPMENT

SECTION 115217 - ASSISTIVE LISTENING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable listening system.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Assistive-listening systems shall be provided in accordance with CBC Section 11B-219 and shall comply with CBC Section 11B-706.
   2. The minimum number of receivers to be provided shall be equal to 4% of the total number of seats, but in no case less than two. 25 % minimum of the receivers provided, but no less than two, shall be hearing-aid compatible in accordance with CBC Section 11B-706.3.
   3. If the system provided is limited to specific areas or seats, then such areas or seats shall be within a 50-foot viewing distance of, and have a complete view of, the stage or playing area. CBC Section 11B-219.4.
   4. Provide system with standard mono jacks; hearing aid compatible receivers with neckloop; sound pressure level 110 dB min to 118 dB max, volume control 50dB; signal-to-noise ratio min; peak clipping level max relative to peaks of speech per CBC 11B-706.

1.4 SUBMITTALS

A. Product Data: For portable listening system.

B. User manual: For transmitters and receivers.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain portable listening devices through one source from a single manufacturer.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of assistive listening devices that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Portable Listening System: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Williams Sound. (Basis of Design)
   2. Telex.
   3. Listen Technologies.
   4. Chaparral.
   5. Or equal.

2.2 PORTABLE LISTENING SYSTEM

A. Product: FM ADA Kit 37 FM ADA Compliance Kit by Williams Sound or equal.
   1. Transmitter:
      a. Battery powered and capable of being worn, 60 hours of operation with alkaline batteries, 30 hours with rechargable batteries
      b. 16 selectable channels on FM frequencies between 72 and 76 MHz
      c. Frequency Response: 200Hz to 13kHz
      d. Connector: 3.5mm accepts input from microphone and line level signals
      e. Controls: On/Off, Volume, Mute button with indicator, Channel selector
      f. Internal compression to reduce peak distortion and noise
   2. Receivers:
      a. Battery powered and capable of being worn, 50 hours of operation with alkaline batteries, 32 hours with rechargable batteries.
         1) Enters sleep mode if no RF signal detected for 6 minutes
      b. Channels: 17 between 72 and 76 MHz
         1) Unit shall have ability to lock channel to prevent accidental change of channel
      c. Deviation: 75kHz
      d. De-Emphasis: 75µS
      e. Range: AFC Range ±120kHz
      f. Sensitivity: 2µV @ 12dB Sinad with Squelch Defeated
      g. Max Input Signal: 100mV
      h. Frequency Response 200Hz - 15kHz
      i. Modulation FM, ±75kHz Peak Deviation
      j. Signal to Noise Ratio 65dB Min @ 100µV
      k. Output Level 35mW Max, Peak into 16 Ohms
      l. Connectors 3.5mm Stereo/Mono Headphone Jack
   3. Headphones: Heavy duty, folding, mono.

a. Drivers 1.6" (40 mm)
b. Plug 3.5 mm mono
c. Cord 39" (99 cm)
d. Nominal Impedance 16 Ohms
e. Frequency Response 20 Hz - 20 kHz
f. Maximum Input 100 mW
g. Sensitivity 96 dB @ 1 kHz

4. Lapel Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
5. Desktop Conference Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
6. Neckloops: designed to magnetically couple an audio signal to a telephone coil-equipped (T-Switch) hearing aid.
   a. Magnetic Field Strength: 25 mW input at 1000 Hz produces 1.7 A/m 6" above the center of loop 85µW input produces 0.1 A/m (IEC Standard)
   b. Input Power: 500 mW max
   c. Impedance 8 to 16 Ohms
   d. Connector: 3.5 mm mono mini-plug
7. System Carry Case: Heavy-duty carrying case lined with foam and capable of containing entire system.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Store portable listening system as directed by District.

3.2 DEMONSTRATION

A. Engage a factory-authorized service representative to train District's maintenance personnel to adjust, operate, and maintain portable listening system. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION 115217

DIVISION 12

FURNISHINGS

SECTION 122116 - VERTICAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Vertical louver blinds.

1.3 PERFORMANCE REQUIREMENTS

A. Operable parts and controls at unobstructed forward and side approach locate at 48" to top of device. For reach requirements at other conditions, comply with 11B-308 as they apply. Operable parts shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist and shall have a maximum operable force of 5 pounds. Operable parts shall also comply with CBC sections 11B 308.2, 11B 308.3. and 11B-309.4.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for vertical louver blinds.

C. Samples for Initial Selection: For each type of vertical louver blind indicated.
   1. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For each type of vertical louver blind indicated.
   1. Vane: Not less than 12 inches long.
   2. Vertical Louver Blind: Full-size unit, not less than 16 inches wide by 24 inches long.

E. Window Treatment Schedule: For vertical louver blinds. Use same designations indicated on Drawings.

F. Product Certificates: For each type of vertical louver blind, signed by product manufacturer.

G. Maintenance Data: For vertical louver blinds to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain vertical louver blinds through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide vertical louver blinds with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Flame-Resistance Ratings: Passes NFPA 701.

C. Product Standard: Provide vertical louver blinds complying with WCSC A 100.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver vertical louver blinds in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install vertical louver blinds until construction and wet and dirty finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where vertical louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of vertical louver blinds that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Vertical Louver Blinds: Before installation begins, for each size, color, texture, pattern, and gloss indicated, full-size units equal to 5 percent of amount installed, but no fewer than 2 units.
2. Vanes: Before installation begins, furnish quantity of full-size units equal to 5 percent of amount of each type, color, and size installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Vertical Louver Blinds:
1. Hunter Douglas.
2. Levolor, a Newell Rubbermaid Company.
3. Or equal.

2.2 VERTICAL LOUVER BLINDS, ALUMINUM VANES

A. Rail System: Headrail.
1. Rails: Extruded aluminum; long edges returned or rolled; channel-shaped, enclosing operating mechanisms.
   a. Anodized aluminum, clear anodized.
2. Wheeled Carriers: Engineered plastic with self-lubricating wheels.

B. Vanes: Aluminum, alloy, and temper recommended by producer for type of use and finish indicated; with crowned profile and not less than 3/8-inch overlap when vanes are rotated fully closed.
1. Nominal Vane Width: 3-1/2 inches wide.
2. Vane Finish: One color as indicated.

C. Vane Directional Control: Manual with nickel-plated metal bead chain.

D. Traversing Control: Manual with nickel-plated metal bead chain.

E. Louver Bottom: Connecting or spacing chains.

F. Mounting: As indicated on Drawings.

G. Stack Release: Permitting stacked vanes to be moved away from stacking position for total access to glazed opening.

H. Colors, Textures, Patterns, and Gloss: As selected by Architect from manufacturer's full range.

2.3 VERTICAL LOUVER BLIND FABRICATION

A. Product Description: Vertical louver blind consisting of equally spaced, synchronized vanes and rail system with self-aligning carrier mechanisms, carriers, traverse and vane directional mechanisms and controls, and installation hardware.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.
   1. Louver Directional and Traversing Control Mechanisms: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:
   1. Blind Units Installed between (inside) Jambs: Width equal to 1/4 inch per side or 1/2 inch total less than jamb-to-jamb dimension of opening in which each blind is installed. Length equal to 1/4 inch, plus or minus 1/8 inch, less than head-to-sill dimension of opening in which each blind is installed.

D. Installation Brackets: Designed for easy removal and reinstallation of blind, for supporting headrail and operating hardware, and for hardware position and blind mounting method indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to blind hardware and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, unless anodized or plated finish is indicated. Apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install vertical louver blinds level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior vane edges in any position are not closer than 2 inches to interior face of glass. Install intermediate support as required to prevent deflection in headrail. Allow clearances between adjacent blinds and for operating glazed opening's operation hardware, if any.

3.3 ADJUSTING

A. Adjust vertical louver blinds to operate smoothly, easily, safely and free of binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean vertical louver blind surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that vertical louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged vertical louver blinds that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122116

SECTION 126815 – FOLDING TABLES AND BENCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding table and bench seats.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Provide folding tables and bench seats with integral wall pockets with unitized understructure not requiring the tops of benches for operation.

B. Performance Requirements: Bench undercarriage shall be able to support 200 lbs. at any point when top panels are removed.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.
   1. Supply information for each type of on-wall or in-wall table/seating system specified, including detail of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Maintenance data for built-in table/seating systems, including a detailed operation and maintenance manual.

C. Shop Drawings: Show fabrication and installation of built-in table/seating, including plans, elevations, sections, details of components, profiles and finishes.

D. Samples:
   1. For initial selection in the form of manufacturer's color charts consisting of actual units or sections of the units showing the full range of colors, textures and patterns available for each exposed material involving color selection.
   2. For verification of the following items, provide samples from the same material to be used for the work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
      a. High-pressure plastic laminate.

E. Quality Assurance/Control Submittals: Submit the following:

1. Certificates: Manufacturer certification of qualifications of firms or persons specified in the "Quality Assurance" article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses of Architects and Owners as well as other information specified.

F. Closeout Submittals: Submit the following:
1. Warranty documents specified herein.

1.5 QUALITY ASSURANCE

A. Qualifications:
1. Installer Qualifications: Engage an experienced installer who has specialized in installing built-in tables and seating similar to those required for this project and who is acceptable to and certified by the manufacturer of the built-in table/seating system to perform the work of this section.
2. Welder Qualifications: Engage certified welders that have satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, have undergone recertification.

1.6 DELIVERY, STORAGE & HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature/ humidity conditions recommended by the manufacturer.

1.7 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.
1. Warranty Coverage: To include replacement or repair of any defect in the original material and workmanship, including welds, pockets, tables and benches.
2. Warranty Period: 15 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wall-Mounted Tables and Benches:
1. Mitchell Furniture Systems.(Basis of Design)
2. Palmer Hamilton

3. Biofit Engineered Products.
4. Sico.
5. Or equal.

2.2 WALL-MOUNTED TALBES AND BENCHES

A. Wall-mounted tables and benches by Mitchell or equal.
1. Model: D-08-13-2812-S.
2. Description: Double-depth in-wall, recessed mounted pockets.
3. 13’ L x 28 inches W x 29 inches H tables per in-wall pocket unit.
4. Quantity: As indicated on Drawings.
5. Top Surface: Wilsonart Laminate.
   a. Color as selected by Architect.
6. Edge Color: Black.
7. Finish: Power coat, jet black.
8. ADA seating where required.

2.3 FABRICATION

A. Comply with applicable provisions of AWS D1.1 and AWS D1.3.

PART 3 - EXECUTION

3.1 MANUFACTURER’S INSTRUCTIONS

A. Comply with the instructions and recommendations of the bench and table manufacturer.

3.2 EXAMINATION

A. Site Verification of Conditions:
1. With general contractor present, examine area where built-in tables and seating are to be installed.
2. Ensure compliance with installation tolerance requirements and other conditions affecting performance of built-in tables and seating.
3. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Protection: Protect previously installed finish materials from damage during installation of benches and tables.

B. Preparation: Make actual field measurements of construction affecting built-in tables and seating prior to fabrication and show record measurements on-shop drawings.

3.4 INSTALLATION

A. Installation must be done over a level surface with no more than a .125" (3 mm) change in height over a 10' (3 m) area.

B. Install built-in tables and seating to comply with manufacturer's instructions, shop drawings and specifications.

C. Provide accessories indicated, including anchors, fasteners, inserts, and other hardware required for installing and attaching units to adjoining construction.

D. Secure sill level on floor with flat-head screws through each hole provided by the manufacturer using lead or patent type anchors for screws in concrete floors. Install screw heads flush with sill.

E. Seven-foot center-to-center pocket mounting distance is the suggested minimum for 26" (660 mm) aisles between table/bench seats.

F. Height of finished floor must be within .0625" (1.5mm) of top of pocket sill plate. Rough floor to wall must be perpendicular in pocket mounting area.

3.5 ADJUSTING

A. Touch up shop applied finishes to restore damaged or soiled areas.

B. Lubricate, test and adjust each built-in table and seating unit to operate easily/comply with manufacturer's

3.6 CLEANING

A. After installation/adjustment: clean exposed and partially exposed surfaces on each installed built-in table, seating unit, and wall pocket. Use materials and methods recommended by manufacturer.

3.7 DEMONSTRATION

A. Demonstrate and train owner's maintenance personnel on procedures and schedules related to operation, troubleshooting, servicing, inspection, and maintenance.

3.8 PROTECTION

A. Protect installed built-in tables and seating units from damage during subsequent construction.

B. Ensures table and seating units are without damage or deterioration at the time of substantial completion.

END OF SECTION 126815

DIVISION 22

PLUMBING

SECTION 22 05 13 - COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.

6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to

have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division

except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit

detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any

part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40°C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.

E. Multispeed Motors: Separate winding for each speed.

F. Rotor: Random-wound, squirrel cage.

G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

H. Temperature Rise: Match insulation rating.

I. Insulation: Class F.

J. Code Letter Designation:
   1. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

   1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
   2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
   3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
   4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

   1. Permanent-split capacitor.
   2. Split phase.
   3. Capacitor start, inductor run.
   4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor

insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 22 05 13

SECTION 22 05 18- ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this

and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.13 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated and rough-brass finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Chrome-Plated Piping: One-piece, cast-brass type with polished, chrome-plated finish.
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
e. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.
f. Bare Piping in Equipment Rooms: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 22 05 18

SECTION 22 05 23- GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Bronze ball valves.
2. Ductile-iron, single-flange butterfly valves.
3. Bronze lift check valves.
4. Bronze swing check valves.
5. Bronze gate valves.
6. Iron gate valves
7. Manual circuit balancing valves.
8. Gas shut-off cocks.
9. LPG shut-off cocks.

B. Related Sections:

1. Division 2 water distribution piping Sections for general-duty and specialty valves for site construction piping.
2. Division 15 plumbing piping Sections for specialty valves applicable to those Sections only.
3. Division 15 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene diene terpolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Nonrising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

G. SWP: Steam working pressure.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be

neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61-G and NSF-372 for valve materials for potable-water service.

1. Valves for domestic water must comply with the Federal Reduction of Lead in Drinking Water Act.
   a. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%.
   b. All valves must be 3rd party certified.
   c. Bronze valves shall be made of dezincification-resistant material.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set angle, gate, and globe valves closed to prevent rattling.
4. Set ball and plug valves open to minimize exposure of functional surfaces.
5. Set butterfly valves closed or slightly open.
6. Block check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and

sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Piping systems shall be supplied with valves arranged so as to give complete and regulating control of each building and piping systems throughout the building, and located so all parts are easily accessible and maintained.

1. Valve Design: Rising stem or outside screw and yoke stems. Non-rising stem valves may be used where space conditions prevent full extension of rising stems.
2. Sizes: Same size as upstream pipe, unless otherwise indicated.
3. Extended stems: Where piping insulation is indicated or specified, valves shall be equipped with 2” extended handles of non-thermal conductive material. Also provide a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Supply with memory stops, which are fully adjustable after insulation is applied.
4. End Connection: 2 inch and under shall be threaded, 2-1/2 inches and larger shall be flanged or full lug style.

C. Valves for Potable Water must comply with California Lead Free Law, effective January 1, 2010.

1. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%. Source: California Health & Safety Code (116875).
2. All valves must be 3rd party certified.
3. Bronze valves shall be made with dezincification-resistant material.

D. Where possible, valves of one manufacturer shall be used.

E. Provide Class 150 valves meeting the valve specifications where Class 125 valves are specified but are not available.

F. Bronze valves shall be made with dezincification-resistant materials, (Bronze ASTM B62, B61, or B584 Alloy C87850). This includes body, ball, stem and / or trim.

G. Bronze Valves: NPS 2 and smaller with threaded ends, unless otherwise indicated.

H. Ferrous Valves: NPS 2-1/2 and larger with flanged ends, unless otherwise indicated.

I. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

J. Valve Sizes: Same as upstream piping unless otherwise indicated.

K. Valve Actuator Types:

1. Hand-wheel: For valves other than quarter-turn types.
2. Hand-lever: For quarter-turn valves NPS 6 and smaller.

L. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.

a. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Nib-seal handle extension or comparable product by one of the following:

b. General valves:

1) NIBCO
2) Hammond
3) Milwaukee

c. Below grade domestic water shut-off valves (gate valves) 2" and larger:

1) NIBCO.
2) Clow.
3) Mueller.

d. Butterfly Valves:

1) NIBCO.
2) Demco.
3) Dezuric.

e. Plug Valves:

1) Hammond.
2) Milwaukee.

f. Check valves, lift type:

1) Hammond.
2) Milwaukee.

g. Below grade backwater valve isolation valves:

1) NIBCO.
2) Clow.
3) Mueller.

2. Butterfly Valves: With extended neck.

M. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
2. Grooved: With grooves according to AWWA C606.
3. Solder Joint: With sockets according to ASME B16.18.
4. Threaded: With threads according to ASME B1.20.1.

N. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES

A. Three-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-595-Y-66-LF or T-595-Y-66-LF or a comparable product by one of the following,

a. Milwaukee Valve Company.
b. Apollo.

2. Description:

c. Standard: MSS SP-110, NSF 61-G.
d. CWP Rating: 600 psig.
e. Body Design: Three piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
f. Body Material: Bronze ASTM B 584 Alloy C87850 or C87600.

g. Ends: Threaded or Solder.
h. Seats: PTFE or TFE.
i. Stem: 316 Stainless steel.
j. Ball: 316 Stainless steel, vented.
k. Port: Full.

B. Two-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-585-66-LF or T-585-66-LF or a comparable product by one of the following:

a. Conbraco Industries, Inc.; Apollo Div.
b. Milwaukee Valve Company.

2. Description:

a. Standard: MSS SP-110, NSF 61-G.
b. CWP Rating: 600 psig.
c. Body Design: Two piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
d. Body Material: Bronze ASTM B 584 Alloy C87600.
e. Ends: Threaded or Solder.
f. Seats: PTFE or TFE.
g. Stem: 316 Stainless steel.
h. Ball: 316 Stainless steel, vented.
i. Port: Full.

C. 200 CWP, Sizes 2-1/2" – 24", Ductile Iron, Single-Flange Butterfly Valves with EPDM Seat and Aluminum-Bronze Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model LD-2000-3/5, or a comparable product by one of the following:

a. Cooper Cameron Corp.; Cooper Cameron Valves Div.
b. Tyco International, Ltd.; Tyco Valves & Controls

2. Description:

a. Standard: MSS SP-67, Type I, IAPMO.
b. NPS 24 (DN 300) and Smaller CWP Rating: 200 psig (1380 kPa).
c. Body Design: Full Lug type; Bubble tight shutoff, suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: ASTM A 536, ductile iron.
e. Seat: EPDM.
f. Stem: One- or two-piece stainless steel.
g. Disc: Aluminum bronze

D. Retain one or more of six paragraphs in this article if iron, single-flange butterfly valves are required. MSS SP-67 covers iron, single-flange butterfly valves NPS 1-1/2 to NPS 72.

2.3 BRONZE LIFT CHECK VALVES

A. Class 125, Lift Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-480-Y-LF or T-480-Y-LF or a comparable product by one of the following:

a. Hammond.
b. Milwaukee.

2. Description:

a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Vertical flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE, or TFE.

2.4 BRONZE SWING CHECK VALVES

A. Class 125, Bronze Swing Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-413-Y-LF or T-413-Y-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-80, Type 4, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Y-pattern Horizontal flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE or TFE.

2.5 BRONZE GATE VALVES

A. NRS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-113-LF or T-113-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-139, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B 584, dezincification-resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free Silicon Bronze.
f. Disc: Solid wedge; lead free bronze.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron.

B. RS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-111-LF or T-111-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves

2. Description:
a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B584 C87850 dezincification resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free silicon bronze.
f. Disc: Solid wedge, lead free bronze.
g. Packing: Asbestos free.
h. Handwhell: Malleable iron.

2.6 IRON GATE VALVES

A. Class 125, Ductile-Iron Resilient Wedge Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F-619-RWS (NRS) or F-607-RWS (OS&Y) or a comparable product by one of the following:

a. Clow
b. Mueller

2. Description:

a. Standard: AWWA C-509 and C-515,
b. CWP Rating: 300 psig.
c. Body Material: ASTM A-536 ductile iron, fusion-bonded epoxy coating inside and out.
d. Ends: Flanged.
e. Trim: stainless steel.
f. Disc: Rubber encapsulated ductile iron wedge.

g. Packing and Gasket: Asbestos free.

2.7 MANUAL CIRCUIT BALANCING VALVES

A. Bronze, Fixed Orifice, Balancing Valves (2” and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T/S-1810-LF or a comparable product by one of the following:

   a. Or approved equal

2. Description:

   a. CWP Rating: 300 psig
   b. Maximum Operating Temperature: 260°F.
   c. Body Material: Bronze or dezincification-resistant brass, lead free, Y-pattern globe type with fixed orifice (venture) for precise regulation and control. NO QUARTER TURN VALVES WILL BE ACCEPTED.
   d. Plug: Bronze or dezincification-resistant brass with EPDM O-Rings.
   e. Seat: Bronze or dezincification-resistant brass.
   f. Ends: Threaded or Solder.
   g. Pressure Gage Connections: Shall have two metering test ports with internal check and protective caps for use with portable differential pressure metering stations.
   h. Handle Style: Calibrated hand wheel equipped with visual position readout and hidden memory stops for repeatable regulation and control.

B. Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves (2-1/2” and larger):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F/G 737A or a comparable product by one of the following:

   a. Tour & Andersson

2. Description:

   a. CWP Rating: 240 psig
   b. Maximum Operating Temperature: 250°F.
   c. Body Material: Cast-iron or steel body, globe pattern with calibrated orifice. NO BUTTERFLY VALVES.
   d. Stem Seals: EPDM O-Rings
   e. Disc: EPDM coated cast-iron disc.
   f. Seat: Bronze or dezincification brass.
   g. Ends: Flanged or grooved.
   h. Pressure Gage Connection: Integral seals for portable differential pressure meter.
   i. Handle Style: Calibrated hand wheel equipped with visual position readout and concealed memory stops for repeatable regulation and control.

2.8 GAS SHUT-OFF COCKS:

A. Gas Shut-Off Cocks, Above Grade (4" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-FP-600-A or a comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: CSA certified and UL/FM listed.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full

B. Gas Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

2.9 LPG SHUT-OFF COCKS:

A. LPG Shut-Off Cocks, Above Grade (3" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-585-70-UL (1/2" – 1") and T-580-70-UL (1-1/4" – 3") or a comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110, CSA certified and UL/FM listed.
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: 250 psi non-shock LP gas per UL842.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full port (1/2" – 1"), conventional port (1-1/4" – 3")

B. LPG Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install check valves for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.
2. Check Valves: In horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, butterfly valves.
2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
3. Throttling Service: Ball or Butterfly valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends.
3. For Steel Piping, NPS 2 and Smaller: Threaded ends.
4. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends.

3.5 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: Threaded ends.
2. Ball Valves: Two piece, full port, bronze with stainless-steel trim.
3. Bronze Lift Check Valves: Class 125, nonmetallic TFE disc.

4. Bronze Swing Check Valves: Class 150, nonmetallic TFE disc.
5. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 and Larger:

1. Ductile-Iron, Single-Flange Butterfly Valves: 200 CWP, EPDM seat, aluminum-bronze disc.

END OF SECTION 22 05 23

SECTION 22 05 29- HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Fastener systems.

B. Related Sections:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.6 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in

walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This

drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.13 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 Pipe Supports: Unless otherwise indicated on the drawings, shall be as follows:

A. The Contractor shall furnish and install all miscellaneous iron work including angles, channels, etc., required to appropriately support the various piping systems. Hanger spacing and location shall conform to 2019 California Plumbing Code Table 313.1.

B. All horizontal runs of piping within the building to be supported from the structural framing with steel rods and split ring hangers, B-Line, Grinnell Company, Tolco, or approved equal. Steel rods shall be secured to overhead framing with side beam connectors. Where necessary, install angle iron between framing to accommodate hanger rods. Where several pipes are running together, Unistrut, B-Line or Powerstrut channels with clamps may be used in lieu of individual pipe hangers, and supported from structure as herein specified. Submit test data for type of hanger supports to be provided. For support conditions other than specified herein, the Contractor shall submit method of support for approval prior to any installation.

C. Horizontal Piping Hangers and Supports:

1. General: Provide factory fabricated horizontal hangers and supports complying with one of the following MSS types listed to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.

   a. Adjustable Steel Clevis Hangers: (MSS Type 1.) B-Line B 3100
   b. Adjustable Swivel Pipe Rings: (MSS Type 5) B-Line B3690

D. Vertical-Piping Clamps:

1. General: Provide factory fabricated vertical-piping clamps complying with the following types listed, to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
2. Two-Bolt Riser Clamps: (MSS Type 8) B-Line B3373

E. Hanger-Rod Attachments:

1. General: Provide factory fabricated hanger-rod attachments B-Line, Tolco or approved equal, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-58 and manufacturer's published product information. Select size of hanger-rod attachment to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.
2. Side beam eye socket, Tolco Fig. #57 for rod sizes 3/8" dia. and Tolco Fig. #25-30-251 for rod sizes 1/2" dia.

F. Building Attachments:

1. General: Provide factory fabricated building attachments, selected by Installer to suit building structural framing conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments for copper-piping systems.

G. Hanger Rods and Spacing shall conform to the following table:

Pipe Sizes	Spacing	Rods
2 Inch and Smaller	6 Feet	3/8 Inch
2-1/2 Inch to 3 Inch	8 Feet	1/2 Inch
4 Inch and larger	8 Feet	5/8 Inch

H. Hangers and Supports shall be adequate to maintain alignment and prevent sagging and shall be placed within 18 inches of joint. Support shall be provided at each horizontal branch connection.

I. Provide lateral bracing as manufactured by B-Line or approved equal for all piping to prevent swaying or movement in accordance with SMACNA "Guidelines for Seismic Restraints of Piping Systems". Piping smaller than indicated in the guidelines shall be provided with bracing as specified for the smallest size indicated. The entire water distribution system shall be properly braced and will not move due to the action of quick closing of valves.

J. Miscellaneous Supports, Wall Brackets, Etc.: Provide where required in accordance with the best standard practices of the trade. Submit shop drawings for all fabricated supports.

2.2 Isolators. All piping which is not isolated from contact with the building by its insulation shall be installed with a manufactured type isolator. Isolators shall be B-Line vibra clamp and cushion, Super Strut, Stoneman "Trisolator", or approved equal. Piping shall be installed and supported in a manner to provide for expansion without strains. Guides shall be properly installed to ensure this requirement.

2.3 Shields:

A. General: Provide shields at piping hangers and supports, factory-fabricated, for all insulated piping as manufactured by Pipeshields Incorporated or approved equal. Size shields for exact fit to mate with pipe insulation.

1. Protection Shields: MSS Type 40; provide high density insert of same thickness of insulation or equal 100-psi average compressive strength, waterproofed calcium silicate, encased with a sheet metal shield. Insert and shield shall cover entire circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

2.4 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.5 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.6 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ERICO International Corporation.
2. PHS Industries, Inc.
3. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
4. Piping Technology & Products, Inc.

B. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig ASTM C 552 or Type II cellular glass with 100-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, stainless- steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.8 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

D. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

L. Insulated Piping:

1. Attach clamps and spacers to piping.

   a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
   b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
   c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Shield Dimensions for Pipe: Not less than the following:

   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.

b. NPS 4: 12 inches long and 0.06 inch thick.

4. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
5. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099123 "Interior Painting."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports metal trapeze pipe hangers and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.

H. Use thermal-hanger shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
4. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. C-Clamps (MSS Type 23): For structural shapes.
6. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
7. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
8. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
9. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
2. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

O. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 22 05 29

SECTION 22 05 53- IDENITIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Valve tags.
5. Warning tags.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

F. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

G. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or self-tapping screws.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: Black.

C. Background Color: White.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

H. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 incheshigh.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.5 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Section 099123 "Interior Painting."

B. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels with painted, color-coded bands or rectangles on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

C. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

D. Pipe Label Color Schedule:

1. Domestic Water Piping:

a. Background Color: White.
b. Letter Color: Black.

2. Sanitary Waste and Storm Drainage Piping:

a. Background Color: White.
b. Letter Color: Black.

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Cold Water: 1-1/2 inches, round.
b. Hot Water: 1-1/2 inches, round.

2. Valve-Tag Color:

   a. Cold Water: Natural.
   b. Hot Water: Natural.

3. Letter Color:

   a. Cold Water: Black.
   b. Hot Water: Black.

3.5 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 22 05 53

SECTION 22 07 19- PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

1. Section 220716 "Plumbing Equipment Insulation."

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.11 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.12 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.17 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.18 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Hot Water Pipe Insulation: All hot water supply and return piping, except exposed connections to plumbing fixtures, flanges and unions shall be insulated with ASTM C547, Class I, "Johns-Manville" "Micro-Lock" 850-APT, Owens-Corning Fiberglass Corp., ASJ/SL-11 or approved equal, 1" thick for sizes up to 2" and 1-1/2" thick for sizes 2" and larger with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Insulation shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC

1. Exposed insulated piping in occupied areas and exposed outside the building shall be covered with Johns-Manville” “Zeston” 30-mil thick white PVC jacketing material per ASTM D1784 with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Jacketing shall comply with ASTM E84, and shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC.
2. Hot water piping below slab shall have insulation protected by a 10-mil thick polyethylene plastic sleeve sealed watertight with poly vinyl chloride tape.

B. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

E. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

F. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

G. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Johns Manville; Micro-Lok.
b. Knauf Insulation; 1000-Degree Pipe Insulation.
c. Owens Corning; Fiberglas Pipe Insulation.

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

H. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Armacell LLC; Tubolit.
b. Nomaco Insulation; IMCOLOCK and NOMALOCK.

I. All insulation shall be continuous through supports and hangers.

J. All fixtures complying with the provisions of the Americans with Disabilities Act shall be provided with Prowrap insulation for exposed hot water pipe, tailpiece, and trap as manufactured by McGuire, and secured per manufacturers recommendations. No tape wrapping shall be permitted.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
b. Eagle Bridges - Marathon Industries; 225.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-96.
   b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 81-33.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
   b. Eagle Bridges - Marathon Industries; 225.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-20.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Products: Subject to compliance with requirements, provide the following:

   a. Johns Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. ABI, Ideal Tape Division; 428 AWF ASJ.
   b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
   c. Compac Corporation; 104 and 105.
   d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. ABI, Ideal Tape Division; 370 White PVC tape.
   b. Compac Corporation; 130.
   c. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

2.4 SECUREMENTS

A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

2.5 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

   a. McGuire Manufacturing.

2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.

   a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for

above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

B. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be the following:

a. McGuire pre-insulated trap and supply covers.

END OF SECTION 22 07 19

SECTION 22 11 16- DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Under-building-slab and aboveground domestic water pipes, tubes, and fittings inside buildings.
2. Encasement for piping.

B. Related Requirements:

1. Section 221113 "Facility Water Distribution Piping" for water-service piping outside the building from source to the point where water-service piping enters the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.12 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.13 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

B. Field quality-control reports.

1.14 FIELD CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of water service.
2. Do not interrupt water service without Architect's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61. Plastic piping components shall be marked with "NSF-pw."

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

B. Soft Copper Tube: ASTM B 88, Type K water tube, annealed temper.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

D. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

E. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

F. Piping within the building and above grade shall be Type "L" ASTM B88, hard drawn copper tubing with wrought copper sweat fittings ANSI B16.18 and B16.22,

G. Outdoor underground piping in sizes 2-1/2" and 3" shall be Type "L" ASTM B88, hard drawn copper as specified for water piping within the building. Piping 2" and smaller shall be Type "K" ASTM B88, hard drawn copper with wrought copper sweat fittings ANSI B16.18 and B16.22.

H. Piping below the building floor shall be Type "K" soft annealed copper tubing with no fittings below the slab.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. Full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys.

D. Flux: ASTM B 813, water flushable.

E. Brazing Filler Metals: AWS A5.8/A5.8M, BCP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.4 VALVE ACCESSORIES AND SPECIALTIES

A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. For service shut-off valves on domestic water; for pressure regulator assemblies, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type
2. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.5 CORROSION PROTECTION:

1. General.

   a. Corrosion protection shall be provided for all below grade copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

2. Materials.

   a. Copper piping encasement.

      1) The polywrap shall be minimum 6 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall conform to the requirements of ASTM D1248.

2) The polywrap shall be as manufactured by Northtown Company or approved equal.

b. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
½” to ¾” copper	2”
1” to 1-½ copper	3”
2” copper	4”
2-1/2” copper	5”
3” copper	6”

c. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

1) Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

d. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.

D. Install shutoff valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."

E. Install shutoff valve immediately upstream of each dielectric fitting.

F. Install domestic water piping level without pitch and plumb.

G. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

H. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

I. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

J. Install piping to permit valve servicing.

K. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

L. Install piping free of sags and bends.

M. Install fittings for changes in direction and branch connections.

N. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

O. Install thermometers on outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing Piping."

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

S. Corrosion Protection:

1. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the poly-wrap. The bunched-up poly-wrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the poly-wrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.

2. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.
3. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 2 and Smaller: 72 inches with 3/8-inch rod.
2. NPS 2-1/2 to NPS 3: 8 feet with 1/2-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.5 CONCRETE VAULT INSTALLATION

A. Install precast concrete vaults according to ASTM C 891.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
3. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.7 PIPE AND EQUIPMENT IDENTIFICATION

A. Each operating and service line shut-off valve shall be identified by a 19 ga. brass tag with stamped, engraved type of service identified and area served, complete with hole and brass chain mounted on valve stem or handle. Tag shall be a minimum of one and one-half inch (1-1/2") in diameter.

B. All piping systems shall be readily identifiable by appropriate labeling with the name of the piping contained. Such labeling shall be by means of metal tags, stenciling, stamping, or with

adhesive markers, in a manner that is not readily removable. Labeling shall appear on the piping at intervals of not more than 20 ft and at least once in each room and each story traversed by the piping system.

C. Provide on exterior wall of each building opposite the building's main gas service a sign reading "Gas Shut Off". Sign shall be metal with minimum 1-1/2" high-embossed letters.

1. All equipment shall be provided with name plate indicating all pertinent information on it

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

Schedule of Test Pressures:

System Tested	Gauge	Test	Duration
Water	100 PSI	Water	4 Hours

e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

   a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
   b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

   a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
   b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours. Operate all valves during the retention period.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours. Operate all valves during the retention period.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 OPERATION INSTRUCTION

A. Prior to occupancy or prior to the date of final inspection, whichever may occur first, the Contractor shall prepare two (2) sets of typewritten instructions for the operation of all equipment, valves, etc., specified and furnished as a part of the work under this section, and shall assign a competent person, thoroughly familiar with the job, to demonstrate and instruct a representative of the Owner in the operation of the equipment. The time of said demonstration and instructions shall be arranged with the Owner's representative approximately one (1) week in advance. Verbal instructions shall include shut-off location of gas and water. The Contractor shall assemble all operation and maintenance data supplied by the manufacturers of the various pieces of equipment, all keys and special wrenches required to operate and service the equipment (including keys for yard boxes, gas stops and fixture stops), and all equipment warranties and deliver same to the representative of the Owner on date of said instructions.

3.12 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller, shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

E. Under-building-slab, domestic water piping, NPS 2 and smaller, shall be the following:

1. Soft copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

F. Aboveground domestic water piping shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and soldered joints.

3.13 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use ball valves for piping NPS 2 and smaller. Use butterfly valves with flanged ends for piping NPS 2-1/2 and larger.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

END OF SECTION 22 11 16

SECTION 22 11 19- DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Balancing valves.
5. Temperature-actuated, water mixing valves.
6. Hose bibbs.
7. Water-hammer arresters.
8. Trap-seal primer valves.
9. Trap-seal primer systems.

B. Related Requirements:

1. Section 223200 "Domestic Water Filtration Equipment" for water filters in domestic water piping.
2. Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.
3. Section 224300 "Medical Plumbing Fixtures" for thermostatic mixing valves for sitz baths, thermostatic mixing-valve assemblies for hydrotherapy equipment, and outlet boxes for dialysis equipment.
4. Section 224500 "Emergency Plumbing Fixtures" for water tempering equipment.
5. Section 224713 "Drinking Fountains" for water filters for water coolers.
6. Section 224716 "Electric Water Coolers" for water filters for water coolers.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

D. Domestic Water: The Contractor shall be responsible for the domestic water service outside of the building within five feet (5’) of the foundation, and within the building itself. See Civil Engineer’s plans for onsite domestic water system.

E. Domestic Water Service: The Contractor shall arrange with the serving utility company for the installation of all water meter assemblies and reduced pressure backflow devices, including the service mains and vaults, and all required appurtenances as indicated on the drawings and in accordance with serving utility standards and shall pay all costs incurred. All required capacity fees, frontage fees and inspections, shall be paid for by the Owner. Contractor shall provide necessary tap-in connections in water main for sterilizing of domestic water system. Contractor shall connect into the main water service line as indicated on the drawings. The installation shall be in accordance with the serving utility company's standards.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 and NSF 14.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
   b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1001.
4. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
5. Body: Bronze.
6. Inlet and Outlet Connections: Threaded.
7. Finish: Rough bronze.

B. Hose-Connection Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.
d. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1011.
4. Body: Bronze, nonremovable, with manual drain.
5. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
6. Finish: Rough bronze.

C. Pressure Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1020.
4. Operation: Continuous-pressure applications.
5. Pressure Loss: 5 psig maximum, through middle third of flow range.
6. Size: See plans.
7. Design Flow Rate: See plans.
8. Selected Unit Flow Range Limits: See plans.
9. Accessories:

a. Valves: Ball type, on inlet and outlet.

D. Laboratory-Faucet Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1035.
4. Size: NPS 1/4 or NPS 3/8 (DN 8 or DN 10) matching faucet size.
5. Body: Bronze.
6. End Connections: Threaded.
7. Finish: Chrome plated.

2.4 OUTLET BOXES

A. Clothes Washer Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. Guy Gray Manufacturing Co., Inc.
   c. IPS Corporation.
   d. Symmons Industries, Inc.
   e. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   f. Whitehall Manufacturing; a div. of Acorn Engineering Company.
   g. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.

3. Mounting: Recessed.
4. Material and Finish: Plastic box and faceplate.
5. Faucet: Combination valved fitting or separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
6. Supply Shutoff Fittings: NPS 1/2 (DN 15) gate, globe, or ball valves and NPS 1/2 (DN 15) copper, water tubing.
7. Drain: NPS 2 (DN 50) standpipe and P-trap for direct waste connection to drainage piping.
8. Inlet Hoses: Two 60-inch- (1500-mm-) long, rubber household clothes washer inlet hoses with female, garden-hose-thread couplings. Include rubber washers.
9. Drain Hose: One 48-inch- (1200-mm-) long, rubber household clothes washer drain hose with hooked end.

B. Icemaker Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. IPS Corporation.

3. Mounting: Recessed.
4. Material and Finish Plastic box and faceplate.
5. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 (DN 15) or smaller copper tube outlet.
6. Supply Shutoff Fitting: NPS 1/2 (DN 15) gate, globe, or ball valve and NPS 1/2 (DN 15) copper, water tubing.

2.5 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Include operating key with each operating-key hose bibb.

2.6 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.
   b. Zurn Industries, LLC; Plumbing Products Group; Specification Drainage Products.

2. Standard: ASSE 1010 or PDI-WH 201.
3. Type: Metal bellows.
4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.7 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. MIFAB, Inc.
   b. Precision Plumbing Products, Inc.
   c. Sioux Chief Manufacturing Company, Inc.

2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.8 TRAP-SEAL PRIMER SYSTEMS

A. Trap-Seal Primer Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.

2. Standard: ASSE 1044.
3. Piping: NPS 3/4, ASTM B 88, Type L; copper, water tubing.
4. Cabinet: Surface-mounted steel box with stainless-steel cover.
5. Electric Controls: 24-hour timer, solenoid valve, and manual switch for 120-V ac power.

   a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

6. Vacuum Breaker: ASSE 1001.
7. Number Outlets: Four.
8. Size Outlets: NPS 1/2.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water-hammer arresters in water piping according to PDI-WH 201.

B. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

C. Install trap-seal primer systems with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 Access Panels:

A. Wall access panels shall be minimum 12" x 12" for concealed valves and other equipment unless otherwise specified or indicated. Ceiling access panels shall be 18" x 18" minimum. Access panels shall be located and positioned for ready access and service of equipment housed within. Where access panels are specified with keyed cylinder locks, all such locks shall be identically keyed.
   1. Wall, Non-Fire Rated: Elmdor/Stoneman DW-SS-CL, drywall, stainless steel finish, cylinder lock.
   2. Ceiling, Non-fire Rated: Elmdor/Stoneman DW, drywall, prime coated finish, screwdriver latch.

3. Wall, Fire Rated: Elmdor/Stoneman FR-SS-CL, fire rated, stainless steel finish, cylinder lock.
4. Ceiling, Fire rated: Elmdor/Stoneman FRC, Fire rated, prime coated finish, return latch.

3.3 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.4 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
1. Supply-type, trap-seal primer valves.
2. Trap-seal primer systems.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.5 FIELD QUALITY CONTROL

A. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

B. Prepare test and inspection reports.

3.6 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

B. Set field-adjustable flow set points of balancing valves.

C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

END OF SECTION 22 11 19

SECTION 22 13 16- SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

B. Related Sections:
1. Section 221313 "Facility Sanitary Sewers" for sanitary sewerage piping and structures outside the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
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8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

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A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

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A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

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    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

    1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

1.14 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.15 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Architect's written permission.

1.16 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.17 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.18 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.

C. ASTM C 1540, CISPI, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ANACO-Husky SD 4000 series.
b. Clamp All HI_TORQ 125 series

2. Standards: ASTM C 1277 and CISPI 310.
3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Soil and waste piping within the building itself and outside within five feet (5') of the foundation, shall be no-hub cast iron pipe and fittings, asphaltum coated, free from defects, and shall comply with CISPI. Standard 301, ASTM A-888 or ASTM A-74. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute. Fittings shall be made up with "Husky" SD 4000 series or “Clamp All” HI-TORQ 125 series stainless steel type 304 couplings and shall conform to ASTM C1540 & ASTM C564 except all above ground vent pipe fittings may be made with "Anaco" or "Tyler" stainless steel two band couplings conforming to CISPI Standard 310.

E. Except where otherwise indicated on the plans, building sewer piping from five feet (5') outside of the building to connections at the sewer shall be PVC (polyvinyl chloride) ASTM D3034, SDR-35 sewer pipe with locked-in gasket (ASTM F477, Elastomeric Seal)

2.3 CLEANOUTS

A. Cast-Iron Cleanouts:

1. Cleanouts to Grade: Jay R. Smith No. 4258 or Jay R. Smith No. 4253 with X-H bronze plug and X-X-H non-skid cover with lifting device set flush with surface for concrete areas. Asphalt or nonsurfaced areas shall be installed with ring of concrete poured around the bottom flange six inches (6") below surface. Use cast iron soil pipe on cleanout risers. For cleanouts in non-traffic areas, terminate cleanout plug in concrete yard box
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Smith, Jay R. Mfg. Co.
    b. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

3. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
4. Top-Loading Classification(s): Light Duty Medium Duty Heavy Duty and Extra-Heavy Duty.
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

B. Yard Boxes & Vaults: For service for cleanouts, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type.

2.4 CORROSION PROTECTION

A. General.

1. Corrosion protection shall be provided for all below grade cast iron and copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

B. Materials.

1. Cast iron piping encasement.

    a. The polywrap shall be minimum 8 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall meet or exceed the requirements of AWWA C105, ANSI A21.5 and ASTM A674.
    b. The polywrap shall be as manufactured by Northtown Company or approved equal.

2. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
2” to 3” cast iron	14”

4” cast iron	16”
6” cast iron	20”
8” cast iron	24”

3. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

   a. Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

4. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.

2. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

O. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."

2. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

P. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

T. Below-grade piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts and sleeves as manufactured by Century Line.

U. Corrosion Protection:

a. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the polywrap. The bunched-up polywrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the polywrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.
b. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.

c. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
8. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
4. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4: 84 inches with 3/8-inch rod.
2. NPS 1-1/2: 108 inches with 3/8-inch rod.
3. NPS 2: 10 feet with 3/8-inch rod.
4. NPS 2-1/2: 11 feet with 1/2-inch rod.
5. NPS 3: 12 feet with 1/2-inch rod.
6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.

I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

3.7 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. No piping work shall be concealed or covered until piping has been tested, inspected and approved by the Inspector. All piping for plumbing systems shall be completely installed and tested as required by the Uniform Plumbing Code. Test pressures and times indicated are a minimum only. All tests shall be as required by the governing authority as wellTest for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.10 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

C. Aboveground, vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

D. Underground, soil, waste, and vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

END OF SECTION 22 13 16

SECTION 22 42 13 13- COMMERCIAL WATER CLOSETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Water closets.
2. Flushometer valves.
3. Toilet seats.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.

11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
12. Clearance around accessible water closets and in toilet compartments shall be 60 inches minimum measured perpendicular from the side wall and 56 inches minimum measured perpendicular from the rear wall per CBC Section 11B-604.3.1.
13. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
14. Accessible fixture controls shall comply with CBC Sections 11B-604.6 for water closets and 11B-604.9.5 for children's water closets.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each

submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding

proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than six of each type.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 FLOOR-MOUNTED, BOTTOM-OUTLET WATER CLOSETS

A. Water Closets: Floor mounted, bottom outlet, top spud.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Bowl:

a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
b. Material: Vitreous china.
c. Type: Siphon jet.
d. Style: Flushometer valve.
e. Height: Standard.
f. Rim Contour: Elongated.
g. Water Consumption: 1.28 gal. (4.8 L) per flush.
h. Spud Size and Location: NPS 1-1/2 (DN 40); top.

2.2 FLUSHOMETER VALVES

A. Lever-Handle, Diaphragm Flushometer Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Sloan Valve Company.

2. Standard: ASSE 1037.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: Exposed.
9. Consumption: 1.28 gal. (4.8 L) per flush.
10. Minimum Inlet: NPS 1 (DN 25).
11. Minimum Outlet: NPS 1-1/4 (DN 32).

2.3 TOILET SEATS

A. Toilet Seats:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Bemis Manufacturing Company.
   b. Olsonite Seat Co.

2. Standard: IAPMO/ANSI Z124.5.
3. Material: Plastic.
4. Type: Commercial (Standard).
5. Shape: Elongated rim, open front.
6. Hinge: Self-sustaining, check.
7. Hinge Material: Noncorroding metal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, according to ICC/ANSI A117.1.

B. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.

C. Install toilet seats on water closets.

D. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Where installing piping adjacent to water closets, allow space for service and maintenance.

3.4 ADJUSTING

A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.

B. Adjust water pressure at flushometer valves to produce proper flow.

C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.

B. Install protective covering for installed water closets and fittings.

C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-604.6 for water closets

END OF SECTION 22 42 13 13

SECTION 22 42 16 13- COMMERCIAL LAVATORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lavatories.
2. Faucets.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.
11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.

12. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
13. Accessible fixture controls shall comply with CBC Sections 11B-611.3 for lavatories and sinks.
14. Accessible lavatories and sinks shall be mounted with the front of the higher of the rim or counter surface 34” maximum above the finish floor or ground. Depth of lavatories or sinks shall not interfere with knee an toe clearance provided in accordance with CBC 11B-306 when forward approach is required CBC Sections 11B-606.3 and 11B606.7.
15. Water supply and drain pipes under accessible lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under accessible lavatories or sinks. CBC Section 11B-606.5.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES

A. Lavatory: Vitreous china, wall mounted, with back.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Fixture:

a. Standard: ASME A112.19.2/CSA B45.1.
b. Type: For wall hanging.
c. Faucet-Hole Location: Top.

d. Color: White.
e. Mounting Material: Chair carrier.

3. Support: ASME A112.6.1M, Type II, concealed-arm lavatory carrier.

2.2 SOLID-BRASS, MANUALLY OPERATED FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Lavatory Faucets: Manual-type, single-control mixing, commercial, solid-brass valve.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago Faucets.

2. Standard: ASME A112.18.1/CSA B125.1.
3. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
4. Body Material: Commercial, solid brass.
5. Finish: Polished chrome plate.
6. Mounting Type: Deck, exposed.

2.3 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

E. Operation: Loose key.

F. Risers:

1. NPS 3/8.
2. Chrome-plated, rigid-copper-pipe and brass straight or offset tailpieces riser.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Install lavatories level and plumb according to roughing-in drawings.

B. Install supports, affixed to building substrate, for wall-mounted lavatories.

C. Install accessible wall-mounted lavatories at handicapped/elderly mounting height for people with disabilities or the elderly, according to ICC/ANSI A117.1.

D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

G. Point of use mixing valve in cabinet to be recessed in wall, under lavatory.

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of lavatories, inspect and repair damaged finishes.

B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed lavatories and fittings.

D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-606.4 for lavatories and sinks.

D. Accessible sinks shall be 6-1/2” deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34” maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 42 16 13

SECTION 22 47 13- DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes drinking fountains and related components.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
10. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
11. Accessible fixture controls shall comply with CBC Sections 11B-602.3 for drinking fountains.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section.

In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains to include in maintenance manuals.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

A. Drinking Fountains: Stainless steel, wall mounted.

1. Stainless-Steel Drinking Fountains:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   1) Elkay Manufacturing Co.
   2) Haws Corporation.

3. Type Receptor: On horizontal support.
4. Back Panel: Stainless-steel wall plate behind drinking fountain.
5. Bubblers: Two, with adjustable stream regulator, located on deck.
6. Control: Push button.
7. Drain: Grid type with NPS 1-1/4 tailpiece.
8. Supply: NPS 3/8 with shutoff valve.
9. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
10. Support: ASME A112.6.1M, Type III lavatory carrier.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

B. Examine walls and floors for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.

B. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.

C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

E. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Install ball, gate, or globe shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Adjust fixture flow regulators for proper flow and stream height.

3.5 CLEANING

A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

C. Provide protective covering for installed fixtures.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains, 11B-604.6 for water closets, 11B-604.9.5 for children's water closets, 11B-605.4 for urinals, 11B-606.4 for lavatories and sinks, 11B-607.5 for bathtubs, 11B-608.5 for showers, and 11B-611.3 for washing machines and clothes dryers.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

3.7 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 47 13

DIVISION 31

EARTHWORK

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and, grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants, and, grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site-clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Erosion Control Drawings C1.10-C1.15.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

3.4 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 31 10 00

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 320120 - DETECTABLE WARNING SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Raised truncated domes.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Detectable warning surfaces:
      a. Detectable warnings surfaces shall comply with CBC Section 11B-705.1.
      b. Detectable warning surfaces shall be yellow conforming to FS 33538 of Federal Standard 595C, except for locations at curb ramps, islands, or cut-through medians where color used shall contrast visually with that of adjacent walking surfaces, either light-on-dark, or dark-on-light. CBC Sections 11B-705.1.1.3.
      c. Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact. CBC Section 11B-705.1.1.4.
      d. Provide minimum 5 year warranty per DSA Bulletin 10/31/02, revised 04/09/08.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Samples: 5 by 5 inch sample.

C. Shop Drawings: Show fabrication details, composite structural system, joints, and material to be used as well as outlining installation materials and procedure.

D. Qualification Data: For manufacturer.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance requirements indicated, based on comprehensive testing of current materials.

F. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Duration: 5 years. Such warranty shall indicate compliance with architectural standards as published in the current edition of the California Building Standards Code, and also include durability criteria which indicate that the shape, color fastness, confirmation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly for specified years after initial installation.
   1. As used in this bulletin, "not degrade significantly" means that the product maintains at least 90 percent of its approved design characteristics, as determined by the enforcing agency.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Raised Truncated Domes: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Armorcast Products Company. (Basis of Design)
   2. Access Tile.
   3. Armor-Tile by Engineered Plastics Inc.
   4. ADA Tactile Systems.
   5. Or equal.

2.2 RAISED TRUNCATED DOMES

A. Surface applied system:
   1. Product: Model A6003648 by Armorcast Products Company.
   2. Compressive Strength: 11,430 PSI per ASTM C-170-99.
   3. Shear Strength: 11,670 PSI per ASTM D-372-02.
   4. Flexural Strength: 3,330 PSI per ASTM C-580-02.
   5. Modulus Elasticity: 1,776,400 PSI per ASTM C-580-02.
   6. Tensile Strength: 1,710 PSI per ASTM C-307-99.
   7. Chemical Resistance: Pass per ASTM D-543.
   8. Simulated Sunlight: Pass per ASTM D-1501.
   9. Accelerated Service Test: Pass per ASTM D-756.
   10. Water Absorption: <.1% per ASTM D-570.
   11. Flammability Test: Pass per ASTM D-635.
   12. Fungus Resistance Test: No Growth per ASTM G-21.
   13. Smoke Density: 0.3 (DS@1.5 Minutes) and 14 (DS@4 Minutes) per ASTM E-662-03.
   14. Color: Yellow.

15. Installation: Flush install by pressing into wet concrete per manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 INSTALLATION

A. Surface Applied System:
1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
3. Ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to the Architect.
4. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.
5. The surface to receive the detectable warning surface tile (not recommended for asphalt) is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a rag soaked in Acetone.
6. Immediately prior to installing the detectable warning surface tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.
7. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
8. Apply the adhesive on the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2” width of the adhesive locator. A 3 x 4 foot tile will typically require an entire tube of adhesive.
9. Set the tile true and square to the curb ramp area as detailed in the design drawings.
10. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3-1/2 inch using the recommended diameter bit.

Drill through the tile without hammer option until the tile has been successfully penetrated, and then with hammer option to drill into the concrete.

11. Immediately after drilling each hole, and while still applying foot pressure, vacuum, brush or blow away dust and set the mechanical fastener as described below, before moving on to the next hole.
12. Mechanically fasten tiles to the concrete substrate using a hammer to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the hammer, taking care to avoid any inadvertent blows to the truncated dome or tile surface. A plastic deadblow or leather hammer is recommended.
13. Working in a sequence which will prevent buckles in the tile, proceed to drill and install all fasteners in the tile's molded recesses.
14. Following the installation of the tiles, the perimeter caulking sealant should be applied. Follow the perimeter caulking sealant manufacturer's recommendations when applying. Tape all perimeter edges of the tile and also tape the adjacent concrete back 1/2” from the tile's perimeter edge. Tool the perimeter caulking with a plastic applicator or spatula to create a straight edge in a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
15. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking.

END OF SECTION 320120

SECTION 32 12 16 - HOT-MIX ASPHALT (HMA) PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hot-mix asphalt paving and paving overlay.

B. Traffic Stripes and Pavement Marking.
   1. traffic stripe: A longitudinal centerline or a longitudinal lane line used for separating traffic lanes in the same direction of travel or in the opposing direction of travel or a longitudinal edge line marking the edge of the traveled way or the edge of a lane at a gore area separating traffic at an exit or entrance ramp. A traffic stripe is a traffic line as shown.
   2. Pavement marking: A transverse marking such as (1) a limit line, (2) a stop line; or (3) a word, symbol, shoulder, parking stall, or railroad grade crossing marking.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

C. Material certificates.

D. Log of placement of asphalt, including dates, times, temperature readings and other pertinent information.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC) and the California Department of Transportation (Caltrans), latest editions and supplements for asphalt paving work. These Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and payment sections do not apply to this document.

C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Tack Coat: Minimum surface temperature of 60 deg F.
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: Crushed rock conforming to SSPWC 203-6.2.3.

B. Fine Aggregate: Sand, rock dust, mineral filler, or a blend of these materials conforming to SSPWC 203-6.2.3. Mineral filler, if required, shall conform to SSPWC section 203-6.2.3.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Paving asphalt, viscosity grade PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

B. Tack Coat: PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

C. Mixes: Hot-Mix Asphalt (HMA):

Surface Course: Dense, hot-laid, hot-mix asphalt plant mix III-C2, PG 64-10 designed in conformance with SSPWC Section 203.

Base Course: Dense, hot laid, hot-mix asphalt plant mix III-B, PG 64-10 designed in conformance with SSPWC Section 203.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-1952E for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01R2 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: White, Yellow, and Blue as indicated on the plans.

C. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

PART 3 - EXECUTION

3.1 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.

1. Mill to a depth of 2 inches, minimum.

3.2 PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.

C. Patching: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

3.3 SURFACE PREPARATION

A. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.08 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
3. Asphalt binder tack coat temperature must be in the range of 285 to 350 deg F when applied.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at minimum temperature of 280 deg F and maximum temperature of 350 deg F (PG 64-10).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Pave HMA in maximum 3” thick compacted layers.

2. Minimum atmospheric temperature shall be 55 deg F, and minimum surface temperature shall be 60 deg F. If the surface to be paved is both in sunlight and shade, pavement surface temperatures must be taken in the shade.

3. Complete compaction for Base Course before surface temperature drops below 250 deg F, and for Finish Course before surface temperature drops below 150 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch (no minus).

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch
2. Surface Course: 1/8 inch
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 PAVEMENT STRIPING AND MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age before starting pavement striping and marking, as recommended by the paint manufacturer.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

E. Do not paint if the atmospheric temperature could drop below 50 deg F during the drying period.

3.8 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 32 12 16

SECTION 32 13 13 – CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Curbs and gutters.
   2. Walkways.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated, including admixtures.

B. Design Mixtures: For each concrete pavement mixture.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

C. All work to be performed and materials to be used shall be in accordance with the Standard Specifications for Public Works Construction, latest edition and supplements.

D. The Contractor shall have one copy of the Standard Specifications at the job site.

E. The Standard Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and pavement sections do not apply to this document.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."

2.2 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: ASTM C 150, Type II, low alkali. Supplement with the following:

a. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quantity.

B. Combined Aggregates: Gradation “C” conforming to SSPWC Section 201-1.3.2.

C. Water: ASTM C 94/C 94M.

2.3 CURING MATERIALS

A. Liquid Curing Compound: ASTM C309, fugitive dye dissipating type, complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.

B. Moisture-Retaining Cover (Curing Sheet): ASTM C 171, non-staining polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

2.4 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

D. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-

1952 for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: As indicated per plan.

2.5 WHEEL STOPS

A. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures in conformance with SSPWS Section 201, with the following properties:

1. Concrete class: 560-C-3250
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45
3. Slump Limit: 4 inches, plus or minus 1 inch.

B. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates to Architect for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

A. General: Form construction, isolation, and control joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

F. Portland Cement Concrete paving shall be stable, firm, and slip-resistant and shall comply with CBC Sections 11B-302 and 11B-403.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.

1. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturers written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these methods.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances as follows

1. Elevation: 1/4 inch
2. Thickness: Plus 3/8 inch minus 1/4 inch
3. Surface: Gap below 10-foot-long, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.9 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.10 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.11 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 323113 - CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Chain-Link Fences: Industrial.
   2. Gates: Swing.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.

A. Accessibility Requirements for Door Hardware: (all requirements below shall apply to gates as well)
   1. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.
   2. The clear opening width for a door shall be 32” minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. There shall be no projections into it below 34” and 4” maximum projections into it between 34” and 80” above the finish floor or ground. Door closers and stops shall be permitted to be 78” minimum above the finish floor or ground. CBC Section 11B-404.2.3
   3. Handles, pulls, latches, locks, and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34” minimum and 44” maximum above finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable form both side. CBC Section 11B-404.2.7
   4. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.
      a. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 pounds (22.2 N) maximum.
      b. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds (67N).
      c. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.

d. The force required to activate any operable parts, such as retracting latch bolts or disengaging other devices, shall be 5 pounds (22.2N) maximum to comply with CBC Section 11B-309.4.

5. Door closing speed shall be as follows: CBC Section 11B-404.2.8.
   a. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds min.
   b. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
6. Thresholds shall comply with CBC Section 11B-404.2.5.
7. Floor stops shall not be located in the path of travel and 4" maximum from walls.
8. Hardware (including panic hardware) shall not be provided with "Night Latch" (NL) function for any accessible doors or gates unless the following conditions are met per DSA Interpretation 10-08 DSA /AC (External), revised 4/28/09. Such conditions must be clearly demonstrated and indicated in the specifications:
   a. Such hardware has a 'dogging' feature.
   b. It is dogged during the time the facility is open.
   c. Such 'dogging' operation is performed only by employees as their job function (non-public use).
9. Pair of doors: limit swing of one leaf to 90 degrees so that a clear floor space is provided beyond the arc of the swing for the wall-mounted tactile sign. CBC Section 11B-703.4.2.1.

B. Fences, gates and hardware:
   1. Gates that are part of the accessible route shall meet all the requirements of an accessible door in compliance with CBC Section 11B-404.
   2. The lever of lever actuated latches or locks for an accessible gate shall be curved with a return to within 1/2" of the (face of) gate to prevent catching on the clothing or persons. California Referenced Standards code. T-24 Part 12, Section 12-10-202, Item (F).
   3. Swing doors and gate surfaces within 10" of the finish floor or ground shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16" of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped. CBC Section 11B-404.2.10.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
   1. Fence and gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, swing gate, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

C. Product Certificates: For each type of chain-link fence, and gate, signed by product manufacturer.
   1. Strength test results for framing according to ASTM F 1043.

D. Qualification Data: For Installer.

E. Maintenance Data: For the following to include in maintenance manuals:

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

B. Interruption of Existing Utility Service: Do not interrupt utility services to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect no fewer than 2 days in advance of proposed interruption of utility services.
   2. Do not proceed with interruption of utility services without Architect's written permission.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Chain-Link Fences and Gates: Subject to compliance with requirements, provide products by one of the following.
   1. Master-Halco.
   2. Ameristar.
   3. Anchor Fence.
   4. Merchants Metals.
   5. Swan Fence Inc.

6. Or equal.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
   1. Steel Wire Fabric: Metallic-coated wire with 9 gage (0.144 inches) core thickness.
      a. Mesh Size: 2 inches.
      b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied after weaving.
   2. Selvage: Knuckled at both selvages.

2.3 INDUSTRIAL FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, and the following:
   1. Group: Group IC round high yield pipe, ASTM F 1043, domestic (not imported) Deluxe Quality (DQ-40) Industrial (not Schedule 40).
   2. Fence Height: As indicated on Drawings.
   3. Strength Requirement: Heavy industrial according to ASTM F 1043.
   4. Post Diameter and Thickness:
      a. Top and Bottom Rail: 1-5/8 inch O.D. (nominal 1-1/4 inch).
      b. Terminal Post (Corner, End, and Gate Post): 2-7/8 inch O.D. (nominal 2-1/2 inch).
      c. Line and Brace Rail: 1-7/8 inch O.D. (nominal 1-1/2 inch).
      d. Swing Gate Members: 1-7/8 inch O.D. (nominal 1-1/2 inch).
   5. End and Corner Post Top: Dome.
   6. Coating for Steel Framing:
      a. Metallic Coating:
         1) Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123 or 4.0-oz./sq. ft. zinc coating per ASTM A 653.
         2) Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
         3) External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc pigmented coating.
         4) Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
         5) Coatings: Any coating above.
      b. Polymer Coating:
         1) ASTM D 668, Class 2b, fluidized PVC bonded and cured onto metallic-coated steel wire.
         2) Color: As selected by Architect from manufacturer's full range, complying with ASTM F 934.

2.4 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:
   1. Location: Extended along bottom of fence fabric and along top when either top or bottom rails are not indicated on Drawings.

B. Metallic-Coated Steel Wire: Minimum 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817, ASTM A 824, and the following:
   1. Metallic Coating: Matching chain-link fabric coating type and weight.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

2.6 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for swing gate types.
   1. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.

B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900, domestic Deluxe Quality (DQ), and the following:
   1. Gate Fabric Height: 2 inches less than adjacent fence height.
   2. Leaf Width: As indicated.
   3. Frame members, including interior bracing:
      a. Tubular Steel: 1-7/8 inch O.D. (nominal 1-1/2 inch).

C. Frame Corner Construction:
   1. Welded adjustable truss rods for panels 5 feet wide or wider.

D. Hardware: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
   1.

2.7 CAST-IN-PLACE CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94.
   1. Concrete Mixes: Normal-weight concrete with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

2.8 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

2.9 POLYMER FINISHES

A. Supplemental Color Coating: In addition to specified metallic coatings for steel, provide fence components with polymer coating.

B. Metallic-Coated Steel Tension Wire: PVC-coated wire complying with ASTM F 1664, Class 2b.

C. Metallic-Coated Steel Framing and Fittings: Comply with ASTM F 626 and ASTM F 1043 for polymer coating applied to exterior surfaces and, except inside cap shapes, to exposed interior surfaces.
   1. Polymer Coating: Not less than 10-mil- thick PVC or 3-mil- thick polyester finish.

D. Color: Match chain-link fabric, complying with ASTM F 934.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.
   1. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Hole diameter dug or drilled minimum 4 times largest cross section of post and minimum depth of 24 inches plus additional 3 inch for each 1 feet increase in fence height over 4 feet.
      b. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts equidistant at intervals not exceeding 10 feet o.c unless otherwise indicated.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
   1. Locate horizontal braces at midheight of fabric 6 feet or higher, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.
   1. Top Tension Wire: Install tension wire through post cap loops.
   2. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Bottom Rails: Install, spanning between posts.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.5 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323113

EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

8600 SOMERSET ST
BUENA PARK, CA 90621
BUENA PARK SCHOOL DISTRICT

DSA File No. 30-4
App. No. 04-120370
PTN. 66456-40

DRAWING INDEX

SHT NO	SHEET NAME
A0.1	COVER SHEET
A0.2	GENERAL NOTES AND ABBREVIATIONS
A0.3	CODE ANALYSIS SITE PLAN
A0.4	EXITING FLOOR PLAN
C0.01	TITLE SHEET
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.30	GRADING PLAN
C1.40	PAVING PLAN
C5.00	DETAILS
A1.1	SITE PLAN - OVERALL
A2.1	DEMOLITION/ ALTERATION FLOOR PLANS/RCPS
A7.1	ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS
A8.1	INTERIOR ELEVATIONS
A9.1	DOOR SCHEDULE AND DETAILS, WINDOW TYPES AND DETAILS
A10.1	EXTERIOR DETAILS
A10.2	INTERIOR DETAILS
A10.3	SIGNAGE DETAILS
S1.1	GENERAL NOTES & STRUCTURAL DETAILS
S2.1	STRUCTURAL PLANS
P0.1	PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES
P1.1	PLUMBING FLOOR PLANS

TOTAL SHEET COUNT: 21

STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS,
INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

Application No. 04-120370

File No. 30-4

[X] The drawings or sheets listed on the cover or index sheet (all M, E and FA drawings)
[ ] This drawing, page of specifications/calculations

have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:

1. design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2. coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.

The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1. (Title 24, Part 1, Section 4-317 [b])

I find that:
[X] All drawings or sheets listed on the cover or index sheet
[ ] This drawing or page

[X] is/are in general conformance with the project design and
[X] has/have been coordinated with the project plans and specifications

Signature **Date** 10/15/2021

Architect or Engineer designated to be in general responsible charge.

Brian P. Whitmore
Print Name

C 30345 **License Number** 09-30-2023 **Expiration Date**

STATEMENT OF GENERAL CONFORMANCE AND SIGNATURE BLOCK PER IR A-18

CODES AND REGULATIONS

PARTIAL LIST OF APPLICABLE CODES AS OF JANUARY 1, 2020*

2019 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
(2018 INTERNATIONAL BUILDING CODE, VOL 1 & 2 AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
(2018 IAPMO UNIFORM PLUMBING CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR

2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
(2018 INTERNATIONAL FIRE CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
(2018 INTERNATIONAL EXISTING BUILDING CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen) PART 11, TITLE 24 CCR

2019 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

2016 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS (PER 2019 CBC PART 2 CH 35)

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PROJECT DESCRIPTION

THE PROJECT INCLUDES REPLACING STOREFRONT, ACCESSIBLE RESTROOM AND PATH OF TRAVEL UPGRADES AND FINISHES IN THE MULTI-PURPOSE ROOM.

DSA REQUIREMENTS

1. ALL WORK SHALL CONFORM TO THE 2019 EDITION OF THE TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. AS A FACILITY WHICH COMES UNDER THE APPROVAL AND AUTHORITY OF THE DIVISION OF THE STATE ARCHITECT (DSA), THIS PROJECT IS SUBJECT TO DRAWING AND JOB SITE REVIEW BY A REPRESENTATIVE OF DSA.
3. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS AFFECTING FLA, SSS, AND/OR ACS SHALL BE MADE BY ADDENDA OR A CONSTRUCTION CHANGE DOCUMENT APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR
4. A PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN ITEM #17.
5. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
6. A COPY OF PART 1 TO PART 5 OF TITLE 24 SHALL BE KEPT AND BE AVAILABLE IN THE FIELD DURING CONSTRUCTION.
7. DSA SHALL BE NOTIFIED OF THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24, CCR
8. THE DIVISION OF THE STATE ARCHITECT IS EXEMPT FROM ARBITRATION OR MEDIATION PROCEDURES.
9. SUPERVISION BY THE DIVISION OF THE STATE ARCHITECT IS PER SECTION 4-334, PART 1, TITLE 24, CCR
10. ADMINISTRATION OF CONSTRUCTION PER PART 1, TITLE 24, CCR:
    - VERIFIED REPORTS PER SECT 4-336; PART 1, TITLE 24 CCR
    - DUTIES OF ARCHITECT PER SECT 4-331, 4-341; PART 1, TITLE 24 CCR
    - DUTIES OF CONTRACTOR PER SECT. 4-343; PART 1, TITLE 24
11. TESTING AND INSPECTION:
    - INSPECTION APPROVED BY DSA AS PER SECT. 4-333(D); PART 1, TITLE 24, CCR
    - TESTS AND TESTING LABORATORIES PER SECT 4-335
    - SPECIAL INSPECTION PER SECT. 4-333(C)
12. CHANGES IN LEVEL FOR FLOOR FINISHES SHALL CONFORM WITH CBC SECTION 11B-302 AND 11B-303.
13. ALL TESTS TO CONFORM TO REQUIREMENTS OF SECTION 4-335; PART 1, TITLE 24, CCR
14. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335; PART 1, TITLE 24, CCR AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.
15. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH ITEM #17.
16. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)
17. INSPECTOR OF RECORD REQUIREMENTS:
    A. A DSA CERTIFIED PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.
    B. INSPECTOR SHALL BE CERTIFIED AS A CLASS 3 INSPECTOR THROUGH THE DIVISION OF THE STATE ARCHITECT INSPECTOR EXAMINATION PROGRAM. INSPECTOR SHALL ALSO BE SPECIFICALLY APPROVED BY THE DIVISION OF THE STATE ARCHITECT FOR THIS PROJECT AT LEAST 10 DAYS PRIOR TO THE START OF ANY WORK FOR THIS PROJECT.
    C. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.

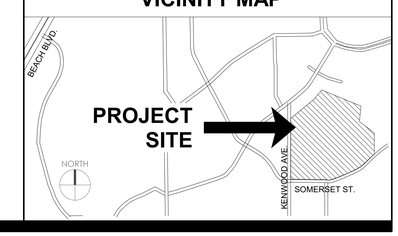
DEFERRED APPROVALS

NONE

ADD ALTERNATES

FOLDING GLASS PARTITION IN LIEU OF STOREFRONT AT NORTH ELEVATION

VICINITY MAP



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120370 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

GENERAL NOTES

1. This sheet is part of a set and is not to be used alone.
2. This sheet is not to be used for construction unless the architect's stamp and signature appear on the drawings and the status box indicated drawings have been released for construction.
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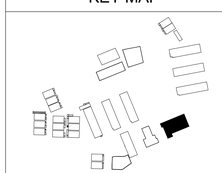
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

COVER SHEET

Date 10/19/2021	Project Number 21009
Scale 1" = 100'-0"	Drawing Number A0.1
Drawn / Checked	
Author / Checker	

PRINT DATE: 10/22/2021 4:49:18 PM
FILE PATH: C:\Users\eyadm\Documents\21009-Buena-Park-USD-Emery-MPRA19_eyad9.rvt

ARCHITECTURAL DRAWING ABBREVIATIONS

#	POUND OR NUMBER
&	AND
*	ITEMS IDENTIFIED AS "NIC" ARE NOT PART OF THIS DSA APPROVAL
2X	NOMINAL LUMBER SIZE (4X, 6X, 8X, ETC.)
@	AT
⊥	PERPENDICULAR
A	
A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABV	ABOVE
AC	ASPHALTIC CONCRETE
ACC	ACCESS(IBLE)
ACP	ALUMINUM COMPOSITE PANEL
ACST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADDM	ADDENDUM
ADH	ADHESIVE
ADJ	ADJUSTABLE
ADJC	ADJACENT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISHED GRADE
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
ALS	ASSISTED LISTENING SYSTEM
ALT	ALTERNATE
ALUM./AL.	ALUMINUM
ANC	ANCHOR, ANCHORAGE
APLD	APPLIED
APPRX	APPROXIMATELY
ARCH	ARCHITECT(URAL)
ASC	ABOVE SUSPENDED CEILING
ASF	ABOVE STAGE FINISH
ASPH	ASPHALT
ASSY	ASSEMBLY
ASYM	ASYMMETRICAL
AUTO	AUTOMATIC
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
B	
B	BOLT
BC	BACK OF CURB
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLW	BELOW
BLW CLG	BELOW CEILING
BLW FFLR	BELOW FINISH FLOOR
BM	BENCH MARK
BN	BOUNDARY NAILING
BO	BOTTOM OF
BOT	BOTTOM
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
BRK	BRICK
BRKT	BRACKET
BRS	BRASS
BRZ	BRONZE
BS	BOTH SIDES
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT UP ROOFING
BW	BOTH WAYS
C	
C&G	CURB AND GUTTER
CAB	CABINET
CAD	CADMIUM
CB	CATCH BASIN
CBB	CEMENTITIOUS BACKER BOARD
CBC	CALIFORNIA BUILDING CODE
CEM	CEMENT
CER	CERAMIC
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFLG	COUNTERFLASHING
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CG	CORNER GUARD
CHBD	CHALKBOARD
CHFR	CHAMFER
CI	CAST IRON
CIP	CAST IN PLACE
CIR	CIRCLE
CIRC	CIRCULAR, CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CL	CHAIN LINK OR CENTER LINE
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLL	CONTRACT LIMIT LINE
CLOS	CLOSURE
CLR	CLEAR(ANCE)
CLRM	CLASSROOM
CMP	CORRUGATED METAL PANEL
CMPST	COMPOSITION
CMU	CONCRETE MASONARY UNIT
CNCL	CONCEALED
CNR	CORNER
CNTR	COUNTER
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMP	COMPOSITE
COMPT	COMPARTMENT
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONTR	CONTRACT(OR)
COORD	COORDINATE
CORR	CORRIDOR
CPR	COPPER
CPRS	COMPRESS(ED), (ION), (IBLE)
CPT	CARPET
CRS	COLD ROLLED STEEL
CS	CAST STONE
CSG	CASING
CSK	COUNTERSUNK
CSMT	CASEMENT
CSWK	CASEWORK
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
CTF	CERAMIC TILE FLOOR
CTG	COATING
CTR	CENTER
CUFT	CUBIC FOOT
CUIN	CUBIC INCH
CUST	CUSTODIAN
CUYD	CUBIC YARD
CW	CURTAIN WALL
D	
D	DRAIN
d.	PENNYWEIGHT (NAILS)
DA	DOUBLE ACTING
DBL	DOUBLE
DEG	DEGREES
DEMO	DEMOLISH, DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DG	DECOMPOSED GRANITE
DH	DOUBLE HUNG
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DMPF	DAMPPROOFING
DMT	DEMOUNTABLE
DN	DOWN
DR	DOOR
DRB	DRAINBOARD
DRLV	DOOR LOUVER
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE
DVTL	DOVETAIL
DW	DISHWASHER
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	
(E)	EXISTING
E	EAST
EA	EACH
EAR	EXHAUST AIR REGISTER
EB	EXPANSION BOLT
EE	EACH END
EF	EACH FACE
EFS	EXTERIOR FINISH SYSTEM
EHD	ELECTRIC HAND DRYER
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EM	EXPANDED METAL
EMER	EMERGENCY
EN	EDGE NAILING
ENCL	ENCLOSE(URE)
ENGR	ENGINEER
ENTR	ENTRANCE
EP	ELECTRICAL PANELBOARD
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCUTCHEON
ESCL	ESCALATOR
ESMT	EASEMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWS	EYE WASH STATION
EXC	EXCAVATE
EXH	EXHAUST
EXP	EXPOSED
EXPN	EXPANSION
EXS	EXTRA STRONG
EXT	EXTERIOR
F	
(F)	FUTURE
F/F	FACE TO FACE
FA	FIRE ALARM
FAB	FABRIC
FBD	FIBERBOARD
FBRK	FIRE BRICK
FCBRK	FACE BRICK
FD	FLOOR DRAIN
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FFEL	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LINE
FGL	FIBERGLASS
FHC	FIRE HOUSE CABINET
FHMB	FLAT HEAD MACHINE BOLT
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLATHEAD WOOD SCREW
FIN	FINISH(ED)
FJT	FLUSH JOINT
FLASH	FLASHING
FLDG	FOLDING
FLG	FLOORING
FLR	FLOOR
FLUOR	FLUORESCENT
FN	FIELD NAILING
FOB	FACE OF BLOCK
FOC	FACE OF CONCRETE/CURB
FOF	FACE OF FINISH
FOG	FACE OF GRID
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FPL	FIREPLACE
FPRF	FIREPROOF(ING)
FR	FRAME(D), (ING)
FRG	FIBERGLASS REINFORCED GYPSUM
FRP	FIBERGLASS REINFORCED PLASTIC
FRTW	FIRE RETARDANT TREATED WOOD
FRZ	FREEZER
FS	FIRE SPRINKLER
FS	FAR SIDE
FSTN	FASTEN, FASTENER
FT	FOOT/FEET
FTG	FOOTING
FURG	FURRED, (ING)
FWC	FABRIC WALL COVERING
G	
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GI	GALVANIZED IRON
GL	GLASS
GLULAM	GLUE LAMINATED
GLZ	GLAZING
GLZCMU	GLAZED CONRETE MASONRY UNIT
GND	GROUND
GPC	GYPSUM PLASTER CEILING
GR	GRADE
GRBM	GRADE BEAM
GRLN	GRADE LINE
GSB	GYPSUM SHEATHING BOARD
GSM	GALVANIZED SHEET METAL
GSS	GALVANIZED STEEL SHEET
GST	GLAZED STRUCTURAL TILE
GT	GROUT
GVL	GRAVEL
GYP	GYPSUM
GYP BD	GYPSUM BOARD
H	
HB	HOSE BIB
HC	HOLLOW CORE
HD	HEAVY DUTY
HDAS	HEADED ANCHOR STUD
HDJT	HEAD JOINT
HDR	HEADER
HDW	HARDWARE
HDWD	HARDWOOD
HEX	HEXAGONAL
HGR	HANGER
HLDN	HOLD DOWN
HM	HOLLOW METAL
HMD	HOLOW METAL DOOR
HMDF	HOLLOW METAL DOOR AND FRAME
HMF	HOLLOW METAL FRAME
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HOUR
HT	HEIGHT
HTG	HEATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATER
I	
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE(D), (ING)
INFO	INFORMATION
INSTL	INSTALL
INSUL	INSULATE(D), (ION)
INT	INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
ISA	INTERNATIONAL SYMBOL OF ACCESSIBILITY
J	
JAN	JANITOR
JST	JOIST
JT	JOINT
K	
KIT	KITCHEN
KO	KNOCKOUT
KPL	KICKPLATE
L	
LAB	LABORATORY
LAD	LADDER
LAM	LAMINATE
LAV	LAVATORY
LB(S)	POUND(S)
LBL	LABEL
LBR	LUMBER
LDR	LEADER
LF	LINEAL FOOT
LG	LENGTH, LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LKNT	LOCKNUT
LKR	LOCKER
LKWASH	LOCKWASHER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMST	LIMSTONE
LNSCP	LANDSCAPE(D)
LNTL	LINTEL
LP	LIGHTPROOF
LPT	LOW POINT
LT	LIGHT
LTWT	LIGHTWEIGHT
LV	LOUVER VENT
LVL	LEVEL(ER)
LWC	LIGHTWEIGHT CONCRETE
LWIC	LIGHTWEIGHT INSULATING CONCRETE
M	
MAINT	MAINTAIN(ANCE)
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MEDICINE CABINET
MCB	METAL CORNER BEAD
MDO	MEDIUM DENSITY OVERLAID
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFD	METAL FLOOR DECKING
MFR	MANUFACTUR(ER)
MH	MANHOLE
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
ML	METAL LATH
MLDG	MOLDING
MLWK	MILLWORK
MO	MASONRY OPENING
MOD	MODULE(AR)
MR	MOISTURE RESISTANT
MRB	MARBLE
MRD	METAL ROOF DECKING
MS	MACHINE SCREW
MTD	MOUNTED
MTL	METAL
MTR	MORTAR
MULL	MULLION
N	
(N)	NEW
N	NORTH
NAT	NATURAL
NCOMBL	NONCOMBUSTIBLE
NE	NOT EXCEEDING
NF	NEAR FACE
NIC	NOT IN CONTRACT
NLB	NON-LOAD BEARING
NM	NONMETALLIC
NO	NUMBER
NOM	NOMINAL
NR	NOISE REDUCTION
NRC	NOISE REDUCTION COEFFICIENT
NRCA	NATIONAL ROOFING CONTRACTOR'S ASSOCIATION
NS	NEAR SIDE
NTS	NOT TO SCALE
O	
O/	OVER
O/O	OUT TO OUT
OA	OVERALL
OBS	OBSCURE
OC	ON CENTER
OCC	OCCUPANTS OR OCCUPANCY
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OFS	OUTSIDE FACE OF STUD
OHMS	OVALHEAD MACHINE SCREW
OHWS	OVALHEAD WOOD SCREW
OI	OWNER INSTALLED
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OPQ	OPAQUE
OPR	OPERABLE
ORD	OVERFLOW ROOF DRAIN
OSB	ORIENTED STRAND BOARD
OVFL	OVERFLOW
OVHD	OVERHEAD
P	
P	PAINT
PA	PUBLIC ADDRESS
PAR	PARALLEL
PAT	PATTERN
PB	PANIC BAR
PBD	PARTICLE BOARD
PC	PORTLAND CEMENT
PCC	PRECAST CONCRETE
PCP	PORTLAND CEMENT PLASTER
PED	PEDESTAL
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PGBD	PEGBOARD
PH	PHASE
PHS	PHILLIPS HEAD SCREW
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PLATE, PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PM	PRESSED METAL
PMF	PRESSED METAL FRAME
PNEU	PNEUMATIC
PNL	PANEL
PNT	PAINT(ED)
POL	POLISHED
POLY	POLYETHYLENE
PORC	PORCELAIN
PORT	PORTABLE
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PREFMD	PREFORMED
PRKG	PARKING
PRML	PREMOLDED
PROJ	PROJECT
PROP	PROPERTY
PSCONC	PRESTRESSED CONCRETE
PT	POINT
PTD	PAPER TOWEL DISPENSER
PTDF	PRESSURE TREATED DOUGLAS FIR
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PVC	POLYVINYL CHLORIDE
PVG	PAVE(D), (ING)
PVMT	PAVEMENT
Q	
QT	QUARRY TILE
QTB	QUARRY TILE BASE
QTF	QUARRY TILE FLOOR
QTR	QUARTER
QTY	QUANTITY
R	
R	RISER
RA	RETURN AIR
RAB	RABBET
RAD	RADIUS
RB	RESILIENT BASE
RBR	RUBBER
RCP	REINFORCED CONCRETE PIPE
RCVR	RECEIVER
RD	ROOF DRAIN
RDWY	ROADWAY
REBAR	REINFORCING STEEL BARS
REC	RECESSED
RECT	RECTANGULAR
RECYL	RECYCLING
REF	REFERENCE
REFL	REFLECT(ED), (IVE), (OR)
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REM	REMOVE(ABLE)
REP	REPAIR
REPL	REPLACE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISION(S), REVISED
RF	RESILIENT FLOORING
RFG	ROOFING
RFH	ROOF HATCH
RGDINS	RIGID INSULATION
RH	RIGHT HAND
RHMS	ROUND HEAD MACHINE SCREW
RHR	RIGHT HAND REVERSE
RHWS	ROUND HEAD WOOD SCREW
RL	ROOF LEADER
RLG	RAILING
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RR	RESTROOM
RS	ROUGH SAWN
RTF	RUBBER TILE FLOORING
RTU	ROOF TOP UNIT
RV	ROOF VENT
RVL	REVEAL
RVS	REVERSE (SIDE)
RVT	RIVET(ED)
RWD	REDWOOD
RWL	RAIN WATER LEADER
S	
S	SOUTH
S2S	SURFACED TWO SIDES
S4S	SURFACED FOUR SIDES
SA	SUPPLY AIR
SALV	SALVAGE
SAM	SELF-ADHERED MEMBRANE
SAT	SUSPENDED ACOUSTICAL TILE
SB	SPLASH BLOCK
SBSTR	SUBSTRATE
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCP	SCUPPER
SCRN	SCREEN
SD	STORM DRAIN
SDBL	SANDBLAST
SEC	SECONDS
SECT	SECTION
SEP	SEPERATE OR SEPERATION
SF	SQUARE FEET, STOREFRONT
SGL	SINGLE
SHR	SHOWER
SHT	SHEET(ING)
SHTG	SHEATHING
SHV	SHELVES(ING)
SIM	SIMILAR
SK	SINK
SKLT	SKYLIGHT
SLD	SEALED
SLDG	SLIDE(ING)
SLDR	SOLDER
SLNT	SEALANT
SLV	SLEEVE
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
SMLS	SEAMLESS
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPENSER
SNDINS	SOUND INSULATION
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SNT	SEALANT
SP	SPACES
SPC	SUSPENDED PLASTER CEILING
SPD	SOAP DISPENSER
SPEC	SPECIFICATION(S)
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
ST	STREET
STA	STATION
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STG	SEATING
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRAIGHT
STRUC	STRUCTURAL
STU	STRUCT
SUSP	SUSPENDED
SV	SHEET VINYL
SYMM	SYMMETRICAL
SYNTH	SYNTHETIC
SYS	SYSTEM
T	
T	TEMPERED, TOILET, TREAD
T24	TITLE 24
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
TB	THRU BOLT
TBE	THREADED BOTH ENDS
TD	TOWEL DISPENSER
TDR	TOWEL DISPENSER/RECEPTACLE
TEL	TELEPHONE
TEMP	TEMPORARY
TER	TERRAZZO
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
THD	THREAD(ED)
THERM	THERMAL
THK	THICK
THRES	THRESHOLD
THRU	THROUGH
TKBD	TACKBOARD
TMPD	TEMPERED
TO	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CURB OR TOP OF CONCRETE
TOF	TOP OF FOOTING
TOFF	TOP OF FINISH FLOOR
TOJ	TOP OF JOIST
TOL	TOLERANCE
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOPV	TOP OF PAVEMENT
TOS	TOP OF SHEATHING
TOSL	TOP OF SLAB
TOST	TOP OF STEEL
TOW	TOP OF WALL OR TOP OF WALK
TPD	TOILET PAPER DISPENSER
TPTN	TOILET PARTITION
TRANS	TRANSITION
TS	TUBE STEEL
TV	TELEVISION
TWLB	TOWEL BAR
TYP	TYPICAL
U	
UC	UNDERCUT
UGND	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
URM	UNREINFORCED MASONRY
UTIL	UTILITY
V	
VAR	VARIES
VB	VINYL BASE
VCT	VINYL COMPOSITION TITLE
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VF	VINYL FABRIC
VFAT	VINYL FACED ACOUSTIC TILE
VIF	VERIFY IN FIELD
VJ	V-JOINT(ED)
VNR	VENEER
VR	VAPOR RETARDER
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	
W	WEST
W.O.	WHERE OCCURS
W/	WITH
W/O	WITHOUT
W/W	WALL TO WALL
WBL	WOOD BLOCKING
WC	WATER CLOSET
WD	WOOD
WDP	WOOD PANELING
WDW	WINDOW
WF	WIDE FLANGE
WFS	WOOD FURRING STRIP
WGL	WIRED GLASS
WH	WATER HEATER
WH	WALL HUNG
WI	WROUGHT IRON
WID	WIDTH, WIDE
WLD	WELD(ED)
WM	WIRE MESH
WP	WATERPROOF(ING)
WPT	WORKING POINT
WR	WIRE ROPE
WS	WOOD SCREW
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
X	
XBRACE	CROSS BRACE
XFMR	TRANSFORMER
XSECT	CROSS SECTION
Y	
YCO	YARD CLEANOUT
YD	YARD

SUPPLEMENTAL GENERAL NOTES

1. THESE DRAWINGS DO NOT CONTAIN THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
2. LOCATIONS OF ALL UTILITIES SHOWN ARE APPROXIMATE AND CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID INTERCEPTING EXISTING PIPING OR CONDUITS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND TO PROTECT THEM FROM DAMAGE. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD ANY UNIDENTIFIED CONDITIONS BE DISCOVERED. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THIS WORK.
3. THESE DOCUMENTS AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF BCA ARCHITECTS, AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF BCA ARCHITECTS.
4. EACH BIDDER SHALL POSSESS AT THE TIME OF BID, A CLASS B OR THE APPROPRIATE CLASS C CONTRACTOR'S LICENSE PURSUANT TO PUBLIC CONTRACT CODE SECTION 3300 AND BUSINESS AND PROFESSIONS CODE SECTION 7028.15. THE SUCCESSFUL BIDDER MUST MAINTAIN THE LICENSE THROUGHOUT THE DURATION OF THIS CONTRACT.
5. FIRE SAFETY DURING CONSTRUCTION:
   - A. GENERAL: FIRE SAFETY DURING CONSTRUCTION SHALL COMPLY WITH 2019 CALIFORNIA FIRE CODE (CFC) CHAPTER 33, PART 9, TITLE 24 CCR
   - B. ACCESS ROADS: FIRE DEPARTMENT ACCESS ROADS SHALL BE ESTABLISHED AND MAINTAINED IN ACCORDANCE WITH CFC 503.
   - C. WATER SUPPLY: WATER MAINS AND HYDRANTS SHALL BE OPERATIONAL IN ACCORDANCE WITH CFC 507.
   - D. BUILDING ACCESS: ACCESS TO BUILDINGS FOR THE PURPOSE OF FIREFIGHTING SHALL BE PROVIDED. CONSTRUCTION MATERIAL SHALL NOT BLOCK ACCESS TO BUILDINGS, HYDRANTS OR FIRE APPLIANCES.
   - E. ALTERATIONS OF BUILDINGS: SHALL COMPLY WITH APPLICABLE PROVISIONS OF SECTION CFC 1103.
   - F. DEMOLITION OF BUILDINGS: SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF CFC CHAPTER 33.
   - G. FIRE WATCH: MAINTAIN FIRE WATCH WHEN REQUIRED BY THE BUILDING OFFICIAL AND WHEN EXISTING FIRE PROTECTION SYSTEMS ARE SHUT DOWN FOR ALTERATIONS. FIRE WATCH SHALL REMAIN IN EFFECT UNTIL EXISTING FIRE PROTECTION SYSTEMS ARE RETURNED TO SERVICE OR AS ALLOWED BY THE BUILDING OFFICIAL.
6. PENETRATIONS IN FIRE RATED MATERIALS OR ASSEMBLIES SHALL BE RESTORED TO EQUAL RATING. FIRE STOP SYSTEMS AS LISTED BY UNDERWRITERS LABORATORIES SHALL BE INSTALLED PER FIRE RESISTANCE DIRECTORY. FIRE STOP SYSTEMS SHALL BE AS SPECIFIED.
7. NONRESIDENTIAL ENERGY STANDARDS COMPLIANCE STATEMENT (TITLE 24, PART 6):
   - A. THE DESIGN INDICATED HEREIN COMPLIES WITH THE REQUIREMENTS OF THE ENERGY CONSERVATION STANDARDS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THE PROPOSED BUILDINGS WILL BE IN COMPLIANCE WITH THE ENERGY CONSERVATION STANDARDS PROVIDED THEY ARE BUILT ACCORDING TO THESE DRAWINGS AND SPECIFICATIONS AND PROVIDED ANY FUTURE IMPROVEMENTS ARE COMPLETED ACCORDING TO THE REQUIREMENTS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THESE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO INCLUDE ALL SIGNIFICANT ENERGY CONSERVATION FEATURES REQUIRED FOR COMPLIANCE WITH THE STANDARDS. BUILDING AREAS THAT ARE UNCONDITIONED AND/OR NOT SUBJECT TO THE STANDARDS ARE INDICATED ON THE DRAWINGS.
   - B. ENVELOPE MANDATORY MEASURES:
     - A. INSTALLED INSULATING MATERIALS SHALL HAVE BEEN CERTIFIED BY THE MANUFACTURER TO COMPLY WITH THE CALIFORNIA QUALITY STANDARDS FOR INSULATING MATERIAL.
     - B. ALL INSULATING MATERIALS SHALL BE INSTALLED IN COMPLIANCE WITH THE FLAME SPREAD RATING AND SMOKE DENSITY REQUIREMENTS OF TITLE 24, PART 2, CALIFORNIA CODE OF REGULATIONS, SECTIONS 719
     - C. ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE POTENTIAL AND OBSERVABLE SOURCES OF AIR LEAKAGE SHALL BE CAULKED, GASKETED, WEATHERSTRIPPED OR OTHERWISE SEALED.
     - D. SITE CONSTRUCTED DOORS, WINDOWS, AND SKYLIGHTS SHALL BE CAULKED BETWEEN THE UNIT AND THE BUILDING, AND SHALL BE WEATHERSTRIPPED (EXCEPT FOR UNFRAMED GLASS DOORS AND FIRE DOORS).
     - E. MANUFACTURED DOORS AND WINDOWS INSTALLED SHALL HAVE AIR INFILTRATION RATES CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS, SECTION 116(a)1.
     - F. MANUFACTURED FENESTRATION PRODUCTS IN THE ENVELOPE OF THE BUILDING, INCLUDING, BUT NOT LIMITED TO, WINDOWS, SLIDING GLASS DOORS, FRENCH DOORS, SKYLIGHTS, CURTAIN WALLS, AND GARDEN WINDOWS MUST BE LABELED FOR U-VALUE IN ACCORDANCE WITH THE (NFRC) NATIONAL FENESTRATION RATING COUNCIL'S INTERIM U-VALUE RATING PROCEDURE.
     - G. DEMISING WALL INSULATION SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF FRAMED WALLS (EXCEPT DOORS).
8. PROOF LOAD TESTS FOR EXPANSION TYPE ANCHOR BOLTS:
   - A. ANCHOR DIAMETER REFERS TO THE THREAD SIZE FOR THE WEDGE CATEGORY AND TO THE ANCHOR OUTSIDE DIAMETER FOR THE SLEEVE CATEGORY.
   - B. APPLY PROOF TEST LOADS TO WEDGE & SLEEVE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
   - C. FOR SLEEVE INTERNALLY THREADED CATEGORIES, VERIFY THAT THE ANCHOR IS NOT PREVENTED FROM WITHDRAWING BY A BASEPLATE OR OTHER FIXTURES. IF RESTRAINT IS FOUND, LOOSEN AND SHIM OR REMOVE FIXTURE(S) PRIOR TO TESTING.
   - D. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
   - E. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
   - F. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
     1. HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE. DROP-IN ANCHORS ARE ONLY TO BE TESTED WITH THIS METHOD.
     2. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS: WEDGE OR SLEEVE TYPE: ONE-HALF (1/2) TURN OF THE NUT. ONE-QUARTER (1/4) TURN OF THE NUT FOR THE 3/8 IN. SLEEVE ANCHOR ONLY.
   - G. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
   - H. ALL ANCHOR BOLTS OF THE EXPANSION TYPE (LOADED IN EITHER PULLOUT OR SHEAR) SHALL HAVE 50 PERCENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT ALLOWED BY THE TYPE OF SUBSTRATE AND DIAMETER OF BOLT LISTED BELOW UNDER TEST VALUES TABLE) PROOF TESTED IN TENSION TO TWICE THE ALLOWABLE TENSION LOAD. IF THERE ARE ANY FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 1910A.5.
   - I. ALL BOLTS MUST HAVE ICC APPROVAL.
   - J. ALL ANCHOR BOLTS OF THE EXPANSION TYPE SHALL BE ONE OF THE FOLLOWING:
     1. HILTI KB-TZ ANCHOR ICC NO. ESR 1917, REISSUED MAY 2021, SUBJECT TO RENEWAL MAY 2022
     2. HILTI KWIK BOLT TZ2, ESR-4266, SUBJECT TO RENEWAL DECEMBER 2021

MINIMUM TEST VALUES				
NORMAL WEIGHT OR LIGHTWEIGHT CONCRETE				
ANCHOR	WEDGE		SLEEVE	
DIA. (IN)	TORQUE (FT-LBS)	TORQUE (FT-LBS)	TENSION LOAD (LBS)	TORQUE (FT-LBS)
1/4	1050	5	540	4
3/8	1740	15	1680	35
1/2	1860	30	2410	60
5/8	3290	75	2590	100
3/4	5490	150	2900	120

9. POWDER-DRIVEN CONCRETE FASTENERS:
   - A. GENERAL: USE POWDER DRIVEN CONCRETE FASTENERS FOR TENSION LOADS IS LIMITED TO SUPPORT OF MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT.
   - B. ALLOWABLE LOADS: IN GENERAL, LOADS SHOULD BE LIMITED TO LESS THAN 100 POUNDS. HOWEVER GREATER LOADS MAY BE PERMITTED FOR SPECIAL CASES WHEN APPROVED BY THE CHECKING SUPERVISOR OR FIELD ENGINEER.
   - C. TESTING: THE OPERATOR, TOOL, AND FASTENER SHALL BE PREQUALIFIED BY THE PROJECT INSPECTOR. HE SHALL OBSERVE THE TESTING OF THE FIRST 10 FASTENER INSTALLATIONS. A TEST "PULL-OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD, OR 200 POUNDS, WHICHEVER IS GREATER, SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS, EXCEPT THAT WHEN THE DESIGN LOAD EXCEEDS 100 POUNDS, ONE HALF OF THE PINS SHALL BE TESTED. SHOULD FAILURE OCCUR ON ANY PIN TESTED, ALL INSTALLATIONS MUST BE TESTED AND UNFAIR PINS REPLACED.
   - D. ALL POWDER DRIVEN CONCRETE FASTENERS SHALL BE ONE OF THE FOLLOWING: HILTI, INC.
     1. DN PINS - WOOD PLATE - ICC NO. ESR 2379, REISSUED AUGUST 2020
        DN PINS - STEEL TRACK - ICC NO. ESR 2269, REISSUED FEBRUARY 2021
     2. ITW RAMSET/REDHEAD DRIVE PIN - WOOD PLATE - ICC NO. ESR 2690
        DRIVE PIN - STEEL TRACK - ICC NO. ESR 1955, REVISED MAY 2021
10. SPECIFICATIONS FOR AUTOMATIC END WELDED STUDS
   - A. MATERIAL: AUTOMATIC END WELDED STUDS SHALL BE NELSON GRANULAR FLUX-FILLED SHEAR CONNECTOR OR ANCHOR STUDS (OR APPROVED EQUAL). STUDS SHALL BE MANUFACTURED OF G-1015 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A108.
   - B. INSTALLATION: THE STUDS SHALL BE AUTOMATICALLY END WELDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN SUCH A MANNER AS TO PROVIDE COMPLETE FUSION BETWEEN THE END OF THE STUD AND THE PLATE. THERE SHOULD BE NO POROSITY OR EVIDENCE OF LACK OF FUSION BETWEEN THE WELDED END OF THE STUD AND THE PLATE. THE STUD SHALL DECREASE IN LENGTH DURING WELDING APPROXIMATELY 1/8" FOR 5/8" AND UNDER, AND 3/16" FOR OVER 5/8" DIAMETER. WELDING SHALL BE DONE ONLY BY QUALIFIED WELDERS APPROVED BY THE WELDING INSPECTOR.
   - C. INSPECTION AND TESTS: INSPECTION, IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 2212A.3 AND 1704A.3.1 OF ALL THE SHOP AND FIELD WELDING OPERATIONS FOR THE AUTOMATIC END WELDED STUDS SHALL BE MADE BY A QUALIFIED WELDING INSPECTOR (APPROVED BY THE DIVISION OF THE STATE ARCHITECT). THE TYPE AND CAPACITY OF THE WELDING EQUIPMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE CHECKED AND APPROVED BY A WELDING INSPECTOR.
   - D. AT THE BEGINNING OF EACH DAY'S WORK, A MINIMUM OF TWO TEST STUD WELDS SHALL BE MADE WITH THE EQUIPMENT TO BE USED TO METAL WHICH IS THE SAME AS THE ACTUAL WORK PIECE. THE TEST STUDS SHALL BE BEND TEST BY STRIKING THEM WITH A SUBJECTED TO A 900 HEAVY HAMMER. AFTER THE ABOVE TEST, THE WELD SECTION SHALL NOT EXHIBIT ANY TEARING OUT OR CRACKING.

SYMBOLS

SYMBOL	DESCRIPTION
N	N = PLAN NORTH ARROW ADDITIONAL ARROW INDICATES TRUE NORTH
X / AX.X	X = BUILDING SECTION NUMBER AX.X = SHEET NUMBER
X / AX.X	X = WALL SECTION NUMBER AX.X = SHEET NUMBER
X / AX.X	X = EXTERIOR ELEVATION NUMBER AX.X = SHEET NUMBER
N, W, E, S, X / AX.X	X = INTERIOR ELEVATION NUMBER AX.X = SHEET NUMBER N,S,E,W = INDICATES CARDINAL DIRECTION
A	GRID LINE, FACE OF STRUCTURE
A	GRID LINE, CENTER OF STRUCTURE
	ELEVATION OR DATUM POINT
WP	WORK POINT
X / AX.X	REFERENCE DETAIL X = DETAIL DRAWING NUMBER AX.X = SHEET NUMBER
20 / AX.X	MATCH LINE AND AREA DESIGNATOR SHADED PORTION IS THE SIDE CONSIDERED
ROOM NAME A119	ROOM NAME AREA IDENTIFICATION: A = BUILDING OR AREA DESIGNATION 1 = FLOOR NUMBER 19 = ROOM NUMBER
A	WINDOW, STOREFRONT, OR CURTAINWALL SEE WINDOW SCHEDULE
A101A	DOOR NUMBER, SEE DOOR SCHEDULE
08 211	KEYNOTE 08 = SPECIFICATION DIVISIONAL PREFIX 2 = SPECIFICATION SUBSECTION PREFIX 11 = NOTE NUMBER
1	REVISION
102 36" x 24" x 24" LOCKABLE	CASEWORK TAG 102 = ARCHITECTURAL WOODWORK STANDARD (AWS) NUMBER 36" x 24" x 24" = WIDTH x HEIGHT x DEPTH LOCKABLE = MODIFYING NOTE NOTE: FOR BASE CABINETS, HEIGHT DOES NOT INCLUDE COUNTERTOP THICKNESS - REFER TO PLANS FOR COUNTERTOP TYPE
41	PATH OF EGRESS 41 = OCCUPANT LOAD STARTING POINT OF PATH OF TRAVEL TO EXIT MARKED BY DOT AT THE BEGINNING OF EGRESS LINE
P	PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP
S1	SIGNAGE TAG

GENERAL NOTES

1. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AND SHALL HAVE VISITED THE CONSTRUCTION SITE. HE/SHE SHALL BE FAMILIAR WITH THE CONDITIONS UNDER WHICH HE/SHE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. THE GENERAL CONTRACTOR SHALL NOT DISPUTE, COMPLAIN OR ASSERT THAT THERE IS ANY MISUNDERSTANDING IN REGARDS TO LOCATION, EXTENT, NATURE OR AMOUNT OF WORK TO BE PERFORMED UNDER THIS CONTRACT DUE TO THE CONTRACTOR'S FAILURE TO INSPECT THE SITE. BIDDERS SHALL NOTIFY THE ARCHITECT OF ANY CONDITIONS, REQUIRING WORK, WHICH ARE NOT COVERED IN THE CONTRACT DOCUMENTS.
2. THERE WILL BE NO SUBSTITUTION FOR SPECIFIED ITEMS WITHOUT PRIOR APPROVAL UNLESS OTHERWISE NOTED. REQUESTS FOR SUBSTITUTIONS SHALL BE MADE IN ACCORDANCE WITH GENERAL CONDITIONS & DIVISION 1
3. THE GENERAL BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS REQUIRED BY GOVERNING AGENCIES IN ORDER TO PERFORM THE WORK.
4. THE FINAL LOCATION OF ALL ELECTRICAL AND SIGNAL EQUIPMENT, PANEL BOARDS, FIXTURES, ETC., SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.
5. DEFINITIONS
   - A. "TYPICAL" MEANS IDENTICAL FOR ALL CONDITIONS, UNLESS OTHERWISE NOTED.
   - B. "SIMILAR" MEANS COMPARABLE CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATIONS.
   - C. "PROVIDE" MEANS TO FURNISH AND INSTALL.
   - D. "FURNISH" MEANS TO FURNISH AND OTHERS WILL INSTALL.
6. DIMENSIONING RULES:
   - A. ALL HORIZONTAL DIMENSIONS SHALL BE TO CENTERLINE OF STUD OR COLUMN GRID LINE, U.O.N
   - B. DIMENSIONS NOTED "CLEAR", "CLR", OR "MINIMUM", "MIN" MUST BE PRECISELY MAINTAINED.
   - C. DIMENSIONS CAN NOT BE MODIFIED WITHOUT APPROVAL OF THE ARCHITECT UNLESS OTHERWISE NOTED.
   - D. VERTICAL DIMENSIONS ARE FROM TOP OF FLOOR SLAB UNLESS OTHERWISE NOTED.
   - E. DO NOT SCALE DRAWINGS. IF ANY ITEM OF WORK CANNOT BE LOCATED, DO NOT PROCEED WITH THE WORK WITHOUT THE ARCHITECT'S APPROVAL.
   - F. DIMENSIONS MARKED "V.I.F." OR "VERIFY" SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
   - G. VERIFY ALL ROUGH OPENING DIMENSIONS FOR FABRICATED ITEMS WITH THE MANUFACTURER PRIOR TO PROCEEDING WITH CONSTRUCTION.
   - H. DOOR AND WINDOW OPENINGS SHALL BE LOCATED ADJACENT TO PERPENDICULAR WALL UNLESS DIMENSIONED OTHERWISE.
7. PROVIDE REQUIRED BACKING, BLOCKING, AND BRACING FOR ALL WALL - MOUNTED FIXTURES, ACCESSORIES AND EQUIPMENT.
8. VERIFY AND COORDINATE WALLS THAT MAY REQUIRE NON-TYPICAL THICKNESS OR FRAMING DUE TO ELECTRICAL, MECHANICAL, PLUMBING, STRUCTURAL AND/OR EQUIPMENT REQUIREMENTS.
9. ALL GLAZING SHALL CONFORM TO FEDERAL GLAZING REGULATIONS AND CHAPTER 24, CBC.
10. ALL CONTRACTORS SHALL REMOVE TRASH AND DEBRIS STEMMING FROM THEIR WORK ON A DAILY BASIS. PROJECT SITE SHALL BE MAINTAINED IN A CLEAN AND ORDERLY CONDITION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL LEFT-OVER MATERIALS, DEBRIS, TOOLS AND EQUIPMENT INVOLVED IN HIS OPERATIONS AT THE CONCLUSION OF THE INSTALLATION. HE SHALL LEAVE ALL AREAS CLEAN AND FREE FROM DUST.
12. HAZARDOUS MATERIALS: THE ARCHITECT AND THE ARCHITECT'S CONSULTANTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL, DISPOSAL OF OR EXPOSURE OF PERSONS TO ASBESTOS OR HAZARDOUS OR TOXIC SUBSTANCES IN ANY FORM AT THE PROJECT SITE. PROFESSIONAL SERVICES RELATED OR IN ANY WAY CONNECTED WITH THE INVESTIGATION, DETECTION, ABATEMENT, REPLACEMENT, USE, SPECIFICATION, OR REMOVAL OF PRODUCTS, MATERIALS, OR PROCESSES CONTAINING ASBESTOS OR HAZARDOUS OR TOXIC MATERIALS ARE BEYOND THE SCOPE OF THIS AGREEMENT.
13. THE GENERAL CONTRACTOR & SUBCONTRACTORS ARE RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES IN ALL AREAS OF NEW WORK PRIOR TO COMMENCEMENT OF EXCAVATION. EXISTING UTILITIES SHOWN ON THE DRAWING ARE APPROXIMATE ROUTING LOCATION AS BEST DETERMINED FROM EXISTING DRAWINGS AND THE SCHOOL DISTRICT, BUT SHOULD NOT BE CONSTRUED TO REPRESENT ALL THE EXISTING UNDERGROUND UTILITIES.
14. ALL TEMPORARY WORK SHALL BE CONSIDERED A PART OF THIS CONTRACT AND NO EXTRA CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS AND INTENT OF THE PROJECT.
15. ALL WALL PENETRATIONS TO EXTERIOR WALLS SHALL BE SEALED AIR/WATER TIGHT. ALL INTERIOR PENETRATIONS SHALL BE SEALED TO PROVIDE A PROFESSIONAL AND FINISHED APPEARANCE.
16. THE DRAWINGS AND SPECIFICATIONS DO NOT UNDERTAKE TO SHOW OR LIST EVERY ITEM TO BE PROVIDED, BUT RATHER TO DEFINE THE REQUIREMENTS FOR A FULL AND WORKING SYSTEM FROM THE STANDPOINT OF THE END USER. FOR THIS REASON, WHEN AN ITEM NOT SHOWN OR LISTED IS CLEARLY NECESSARY FOR PROPER USE CONTROL/ OPERATION OF EQUIPMENT WHICH IS SHOWN OR LISTED, PROVIDE ALL ITEMS WHICH WILL ALLOW THE SYSTEM TO FUNCTION PROPERLY AT NO INCREASE IN CONTRACT PRICE ON TIME.
17. THE DETAILS REFLECT THE DESIGN INTENT FOR TYPICAL CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND SHALL INCLUDE, IN HIS SCOPE. THE COST FOR COMPLETE FINISHED INSTALLATIONS, INCLUDING ANOMALIES, OF ALL TRADES.
18. ALL WORK SHALL CONFORM TO CALIFORNIA CODES, TRADE STANDARDS WHICH GOVERN EACH PHASE OF THE PROJECT, AND ALL APPLICABLE LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
19. THIS DRAWING SET SHALL BE USED IN CONJUNCTION WITH THE CSI FORMAT PROJECT MANUAL PUBLISHED IN BOOK FORM, COMBINED, THEY ARE THE "CONTRACT DOCUMENTS".
20. NO WORK SHALL COMMENCE WITH UNAPPROVED MATERIALS. ANY WORK DONE WITH UNAPPROVED MATERIALS AND EQUIPMENT IS AT THE CONTRACTOR'S RISK. SEE SPECIFICATIONS FOR SUBMITTAL AND SUBSTITUTION REQUIREMENTS.
21. CONSTRUCTION MATERIAL STORED ON THE SITE SHALL BE PROPERLY STACKED AND PROTECTED TO PREVENT DAMAGE OR DETERIORATION. FAILURE IN THIS REGARD MAY BE CAUSE FOR REJECTION OF MATERIAL AND/OR WORK. SECURITY OF MATERIALS ARE THE SOLE RESPONSIBILITY OF CONTRACTOR.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE AND COSTS ATTRIBUTED TO RAIN WATER DAMAGE DURING THE DURATION OF THIS PROJECT.
23. PROTECT AREAS FROM DAMAGE WHICH MAY OCCUR DUE TO TEMPERATURES, WIND, DUST, WATER, ETC. PROVIDE AND MAINTAIN TEMPORARY BARRICADES, CLOSURE WALLS, ETC., AS REQUIRED DURING CONSTRUCTION.
24. MAINTAIN EXISTING PEDESTRIAN ACCESS ALONG EXISTING ADJACENT STREETS.
25. ALL PUBLIC IMPROVEMENTS SHALL BE MADE IN ACCORDANCE WITH THE LATEST ADOPTED CITY/COUNTY STANDARDS.
26. ALL TYPICAL DETAILS SHALL APPLY UNLESS NOTED OTHERWISE.
27. NOTIFY THE ARCHITECT IN WRITING AND SEEK CLARIFICATION IF ANY DISCREPANCIES OR OMISSIONS ARE FOUND. CONTRACTOR SHALL BE RESPONSIBLE FOR REMEDIAL WORK IF RELATED WORK IS CONTINUED AFTER A DISCREPANCY IS IDENTIFIED.
28. NEW FINISHES AND CONSTRUCTION SHALL BE PROTECTED BY THE CONTRACTOR FROM POTENTIAL DAMAGE CAUSED BY CONSTRUCTION ACTIVITY. DAMAGE TO FINISHES OR CONSTRUCTION SHALL BE REPAIRED OR REPLACED (OWNER'S DECISION) BY THE CONTRACTOR WITH IDENTICAL MATERIAL AND/OR FINISHES. CONTRACTOR SHALL MAKE AND MAINTAIN A PHOTOGRAPHIC RECORD NOTEBOOK WITH DATED/INDEXED PHOTOGRAPHS.
29. ALL NOTED WORK IS UNDERSTOOD TO BE NEW, UNLESS LABELED AS "(E)" OR "EXISTING"
30. CONTRACTOR OPERATIONS SHALL NOT BLOCK, HINDER, IMPEDE, OR OTHERWISE INHIBIT THE USE OF REQUIRED EXITS AT ANY TIME. CONTRACTORS SHALL MAINTAIN UNOBSTRUCTED ACECESS TO FIRE EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE PROTECTION FACILITIES, STAIRWAYS AND OTHER ACCESS ROUTES FOR FIER-FIGHTING EQUIPMENT OR PERSONNEL.

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DATE: 11/01/2021

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ARCHITECT	ENGINEER
LICENSED ARCHITECT, BRIAN P WHITMORE, No. C 30345, Ren.: 9/30/23, STATE OF CALIFORNIA, DATE SIGNED: 10/15/2021	

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP

BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

GENERAL NOTES AND ABBREVIATIONS

Date	Project Number
10/19/2021	21009
Scale	Drawing Number
1/8" = 1'-0"	A0.2
Drawn: Author	Checked: Checker

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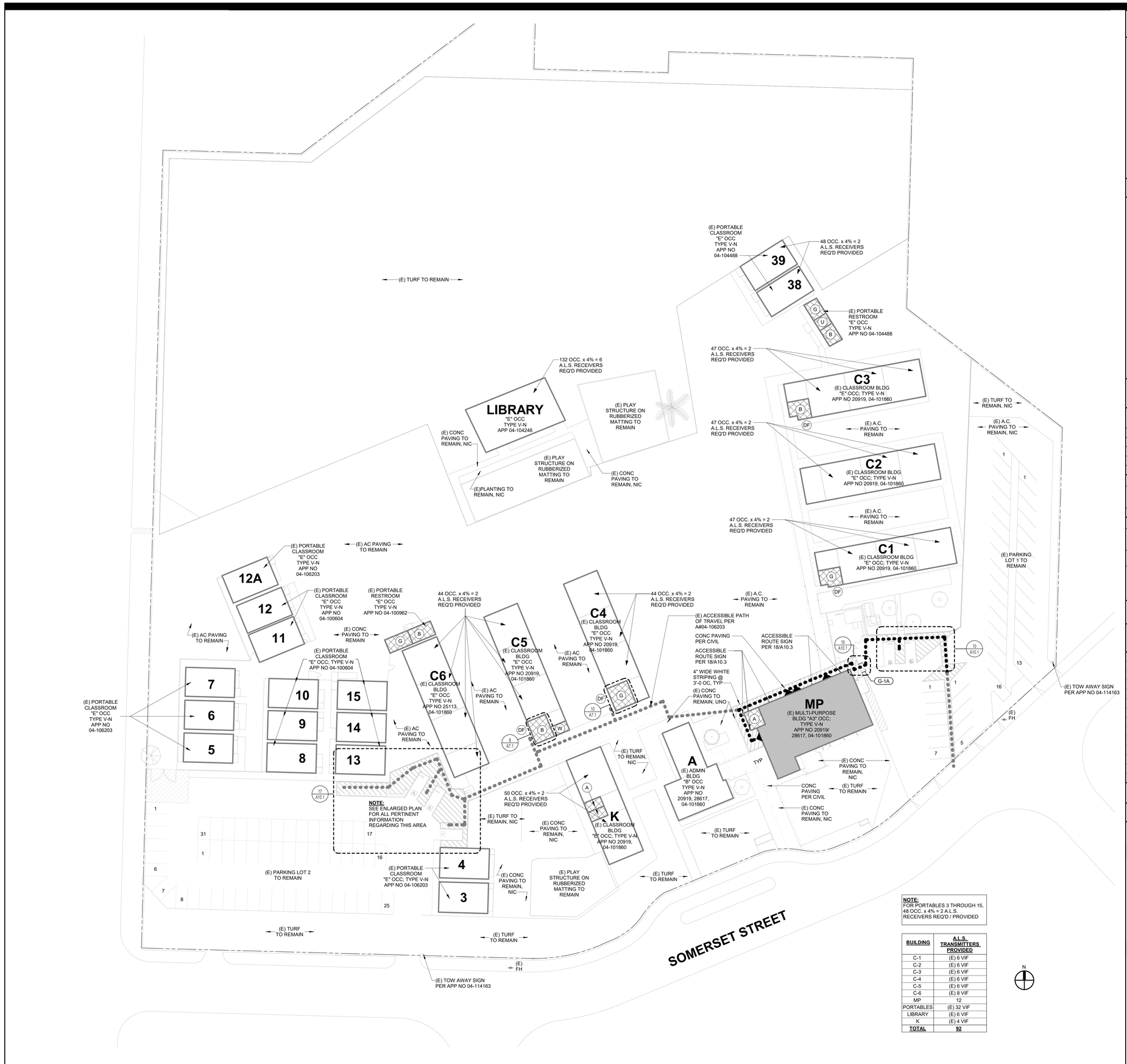

NOTE:
FOR PORTABLES 3 THROUGH 15, 48 OCC. x 4% = 2 A.L.S. RECEIVERS REQ'D / PROVIDED

BUILDING	A.L.S. TRANSMITTERS PROVIDED
C-1	(E) 6 VIF
C-2	(E) 6 VIF
C-3	(E) 6 VIF
C-4	(E) 6 VIF
C-5	(E) 6 VIF
C-6	(E) 8 VIF
MP	12
PORTABLES	(E) 32 VIF
LIBRARY	(E) 6 VIF
K	(E) 4 VIF
TOTAL	**92**

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

(BASED ON DSA PROCEDURE PR 15-01)

THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT WITH THE CBC HAVE BEEN IDENTIFIED AND THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THE ITEMS SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

GENERAL NOTES

1. ALL (E) STRUCTURES AND ITEMS ON SITE ARE APPROXIMATE BASED ON DRAWINGS FROM OWNER.
2. ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAX. SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX. AND AT LEAST 48" WIDE. SURFACE IS STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
3. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80". SEE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT ON THIS SHEET FOR ADDITIONAL POT REQUIREMENTS.
4. ALL SIDEWALKS ALONG THE ACCESSIBLE ROUTE TO BE A MINIMUM OF 4'-0" WIDE, AND THERE SHALL BE NO DROP-OFFS OVER 4" AT EDGE OF WALK OR LANDING. WHERE A 4" DROP-OFF DOES OCCUR, PROVIDING A 6" HIGH WARNING CURB OR GUARD OR HANDRAIL. (SEE CBC SECTION 11B-303.5)
5. GATES ALONG ACCESSIBLE ROUTE SHALL MEET DOOR REQUIREMENTS PER CBC SECTION 11B-404 INCLUDING PANIC HARDWARE AND 10" MIN. SMOOTH BOTTOM OR KICK PLATE.
6. FOR GRATINGS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WALKWAY IN THE PATH OF TRAVEL, GRID/OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" MAXIMUM IN THE DIRECTION OF TRAFFIC FLOW.
7. 36" WIDE CONTINUOUS DETECTABLE WARNING SHALL BE USED WHERE THE PEDESTRIAN PATH CROSSES OR ADJOINS A VEHICULAR WAY (SUCH AS A DRIVEWAY) TO WARN OF POTENTIAL HAZARDS AS PER CBC 11B-705.
8. ALL EXTERIOR OUTWARD SWINGING DOORS TO HAVE A MINIMUM 5'-0" LEVEL LANDING.
9. ALL BUILDING ENTRANCES AND EXTERIOR GROUND LEVEL EXITS SHALL BE ACCESSIBLE.
10. "MANUAL CANE BOLTS, MANUALLY LOCKING HARDWARE OR CHAINS NOT ALLOWED ON GATES WITH PANIC HARDWARE"

ACCESSIBLE PARKING

BASED ON CBC TABLE 11B-208.2 "PARKING SPACES" AND 11B-208.2.4 "VAN PARKING SPACES"

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES	MINIMUM NUMBER OF REQUIRED VAN PARKING SPACES
1 TO 25	1	1 FOR EVERY SIX OR FRACTION OF SIX PARKING SPACES REQ'D BY CBC 11B-208.2
26 TO 50	2	
51 TO 75	3	
76 TO 100	4	
101 TO 150	5	

(E) PARKING LOT 1

TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
41	2 REQ'D/2 PROVIDED	1 REQ'D/1 PROVIDED

(E) PARKING LOT 2

TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
31	2 REQ'D/3 PROVIDED	1 REQ'D/1 PROVIDED

DSA APPLICATION CERTIFICATION

BUILDING NO	APP NO	CERTIFICATION STATUS
A	20919-ORIG CONST	DSA APP'D-05/05/1961
	04-101860	12/17/2008
MP	20919-ORIG CONST	DSA APP'D-05/05/1961
	04-101859	12/16/2008
C1, C2, C3, C4, C5, K	20919-ORIG CONST	DSA APP'D-05/05/1961
	04-101860	12/17/2008
	04-114163	09/16/2016
C6	25113	?
	04-101860	12/17/2008
	04-114163	09/16/2016
LIBRARY	04-104246	09/21/2004
PORTABLES 5, 6, 7, 12, 12A	04-106203	06/24/2014
PORTABLES 8, 9, 10, 13, 14, 15	04-10604	06/02/1999
PORTABLES 38, 39	04-104488	01/12/2005

LEGEND

(E) BUILDING, NOT UNDER SCOPE OF WORK

BUILDING UNDER SCOPE OF WORK

ACCESSIBLE RESTROOM FACILITIES:
(W) WOMENS (M) MENS
(G) GIRLS (B) BOYS
(A) ALL GENDER (DF) DRINKING FOUNTAIN

ACCESSIBLE PATH OF TRAVEL: ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

(E) ACCESSIBLE PATH OF TRAVEL (PER A#101860)

PROPERTY LINE

LOCATION OF ACCESSIBLE EXTERIOR EXIT DOORS, ENTRANCES, AND EGRESS

(E) FIRE HYDRANT TO REMAIN

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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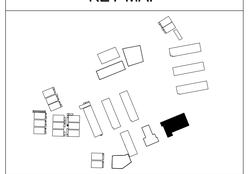
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

CODE ANALYSIS SITE PLAN

Date	Project Number
10/19/2021	21009
Scale	Drawing Number
As indicated	A0.3
Drawn / Checked	
Author / Checker	

CODE ANALYSIS SITE PLAN 1" = 30'-0" 10

PRINT DATE: 10/22/2021 4:49:23 PM
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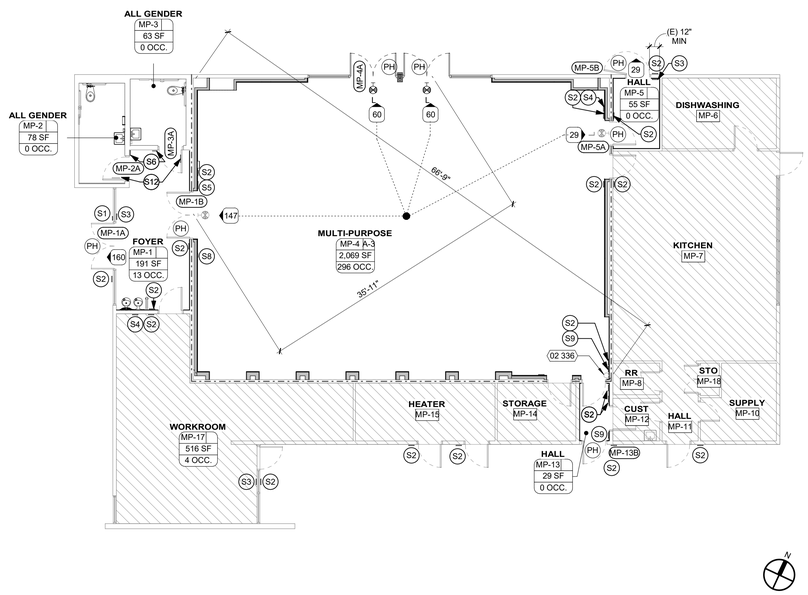

KEYNOTES

NUMBER	NOTE
02 336	(E) FIRE EXTINGUISHER TO REMAIN

GENERAL NOTES

1. WHERE OCCUPANT LOAD SIGN IS REQUIRED, THE SIGN SHALL BE POSTED NEAR THE MAIN EXIT FROM THE ROOM.
2. REQUIRED MEANS OF EGRESS SHALL BE MAINTAINED DURING CONSTRUCTION AND DEMOLITION PER CFC 3311.2.
3. MEANS OF EGRESS ILLUMINATION SHALL BE PROVIDED PER CFC 1013.3.
4. NUMBER OF EXITS SHOWN COMPLY WITH THE MINIMUM REQUIREMENTS SET FORTH IN CBC SECTION 1006.2. WHEN THERE ARE MORE THAN ONE REQUIRED EXIT, THE EXITS SHALL BE LOCATED PER SECTION 1007.1.1. SEE CALCS BELOW.
5. NO EXIT DOOR SHALL BE LESS THAN 32" CLEAR WIDTH.

OCCUPANCY CLASS

ROOM #	ROOM NAME	OCCUPANCY CLASS	SQ. FT. (NET)
C4	GIRLS RESTROOM		180 SF
C5	BOYS' RESTROOM		0 SF
C5	BOYS' RESTROOM		194 SF
MP-1	FOYER		191 SF
MP-2	ALL GENDER		78 SF
MP-3	ALL GENDER		63 SF
MP-5	HALL		55 SF
			762 SF
MP-4	MULTI-PURPOSE	A-3	2,069 SF
A-3			2,069 SF
TOTAL AREA (NET)			2,831 SF

OCCUPANT LOAD CHART

ROOM NUMBER	ROOM NAME	FUNCTION OF SPACE (CBC TABLE 1004.1.2)	SQ. FT. (NET)	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
C4	GIRLS RESTROOM	(none)	180 SF		
C5	BOYS' RESTROOM	(none)	0 SF		
C5	BOYS' RESTROOM	(none)	194 SF		
MP-1	FOYER	(none)	191 SF	15	13
MP-2	ALL GENDER	(none)	78 SF	0	
MP-3	ALL GENDER	(none)	63 SF	0	
MP-4	MULTI-PURPOSE	Assembly Concentrated (chairs only - not fixed)	2,069 SF	7	296
MP-5	HALL	(none)	55 SF	0	
			2,831 SF		309

EXIT WIDTH CALCULATIONS

NOTE: EXIT WIDTH CALCULATIONS ARE PER CBC 1005.3.2. IF CALCULATED EXITING WIDTH IS LESS THAN 32", THEN 32" IS USED AS THE MINIMUM VALUE PER CBC 11B-403.5.1 (EXCEPTION 1). REFER TO "EXIT WIDTH PROVIDED" COLUMN BELOW AND DOOR SCHEDULE ON SHEET A9.1 FOR MORE INFORMATION.

MARK	DOOR WIDTH	EXITING OCCUPANTS	MINIMUM EXIT WIDTH REQUIRED (EXITING OCCUPANTS *.2)	EXIT WIDTH PROVIDED
MP-1A	6'-0"	147	32"	72"
MP-1CX	0'-0"			0"
MP-1DX	0'-0"			0"
MP-4A	6'-0"	59	32"	72"
MP-4B	6'-0"	59	32"	72"
MP-5A	3'-0"	29	32"	36"
MP-5B	3'-0"	29	32"	36"

SIGNAGE LEGEND

- S1 ACCESSIBLE ENTRANCE SIGN, SEE DETAIL 8 / A10.3
- S2 ROOM IDENTIFICATION SIGN, SEE DETAIL 10 / A10.3
- S3 EXIT SIGN, SEE DETAIL 11 / A10.3
- S4 EXIT ROUTE SIGN, SEE DETAIL 12 / A10.3
- S5 MAXIMUM OCCUPANCY SIGN, SEE DETAIL 13 / A10.3
- S6 ALL GENDER WALL MOUNTED SIGN, SEE DETAIL
- S7 ALL GENDER DOOR SIGN, SEE DETAIL 15 / A10.3
- S8 ASSISTIVE LISTENING DEVICE SIGN, SEE DETAIL 19 / A10.3
- S9 INACCESSIBLE EXIT SIGN, SEE DETAIL 20 / A10.3

ALS DEVICE RECEIVER CALCULATION

ROOM NAME	ROOM NO	OCCUPANTS	RECEIVERS REQ'D.
MULTI-PURPOSE	04	294 OCC.	12 RECEIVERS REQ'D.

NOTE:
294 OCC X 4% = 12 ASSISTED LISTENING DEVICE RECEIVERS REQ.'D / PROVIDED. OF THE 12 ALS DEVICE RECEIVERS PROVIDED, 25% OF RECEIVERS SHALL BE HEARING-AID COMPATIBLE IN ACCORDANCE WITH CBC SECTION 11B-216.10 & 11B-703.7.2.4 = 3 HEARING-AID COMPATIBLE RECIEVERS REQUIRED

PROVIDE A MINIMUM OF 2 TRANSMITTERS, OR AS MANY AS REQUIRED PER MFR.

LEGEND

WORKROOM
A101 | B
1,500 SF
10 OCC.
{15}

AREA IDENTITY/ CODE ANALYSIS
WORKROOM = ROOM NAME
A101 = ROOM NUMBER
B = OCCUPANCY CLASS (CBC 302)
1,500 SF = FLOOR AREA
10 = OCCUPANT LOAD
{15} = OCCUPANT LOAD PLUS ANCILLARY SPACE WHERE OCCURS

41

PATH OF EGRESS
41 = OCCUPANT LOAD
STARTING POINT OF PATH OF TRAVEL TO EXIT MARKED BY DOT AT THE BEGINNING OF EGRESS LINE

PH — PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP

(E) 1-HR OCCUPANCY SEPARATION

NOT IN CONTRACT

L — (E) ILLUMINATED EXIT SIGN TO REMAIN (LOW LEVEL AS REQ'D)

L — SELF-ILLUMINATED EXIT SIGN (LOW LEVEL AS REQ'D)

EXITING FLOOR PLAN | 1/8" = 1'-0" | 10

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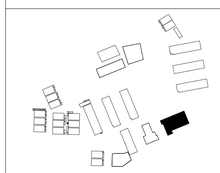
KEY MAP



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
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EXITING FLOOR PLAN

Date 10/19/2021	Project Number 21009
Scale 1/8" = 1'-0"	Drawing Number A0.4
Drawn / Author	Checked / Checker

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GENERAL NOTES:

1. WORK SHOWN HEREON SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," LATEST EDITION AND SUPPLEMENTS, THE 2019 CALIFORNIA BUILDING CODE (EXCAVATION AND GRADING), AND CITY OF BUENA PARK LOCAL ORDINANCES AS APPLICABLE.
2. EXISTING TOPOGRAPHY SHOWN HEREON WAS TAKEN FROM A SURVEY DATED JUNE 11, 2021 BY HAHN & ASSOCIATES, INC.
3. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
4. PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL HIRE A LICENSED LAND SURVEYOR TO VERIFY THAT THE ELEVATIONS SHOWN ON THE GRADING PLAN AT THE JOIN TO THE EXISTING IMPROVEMENTS MATCHES THE EXISTING ELEVATIONS IN THE FIELD. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES, AND SHALL NOT BEGIN CONSTRUCTION, IN THE AREAS OF DISCREPANCIES UNTIL THE CHANGED CONDITIONS HAVE BEEN EVALUATED.
5. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
6. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.
7. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
8. IF AT ANY TIME DURING GRADING OPERATIONS, ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, GRADING IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED.
9. THE PROPOSED GRADE IS THE FINAL GRADE AND NOT THE ROUGH GRADE. THE CONTRACTOR SHALL SUBTRACT THE THICKNESS OF THE PAVED SECTION AND/OR LANDSCAPE TOPSOIL SECTION TO ARRIVE AT THE ROUGH GRADE ELEVATION.
10. STRAIGHT GRADE SHALL BE MAINTAINED BETWEEN CONTOUR LINES AND SPOT ELEVATIONS UNLESS OTHERWISE SHOWN ON THE PLANS.
11. ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT APPROVED DISPOSAL SITES. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FOR THE TRANSPORTATION OF MATERIAL TO AND FROM THE SITE.
12. ALL FILL SOILS OR SOILS DISTURBED OR OVEREXCAVATED DURING CONSTRUCTION SHALL BE COMPACTED NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D-1557.
13. CONSTRUCTION STAKING FOR IMPROVEMENTS SHOWN ON THESE PLANS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR.
14. THE CONTRACTOR SHALL REPLACE ALL EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING, INCLUDING PERMANENT TRENCH RESURFACING.
15. CONTRACTOR TO CONTACT UNDERGROUND SERVICE ALERT (800-227-2600) PRIOR TO EXCAVATION.
16. ALL DIMENSIONS ARE IN FEET OR DECIMALS THEREOF.
17. ALL CURB DIMENSIONS AND RADII ARE TO PAVEMENT FACE OF CURB.
18. CONTRACTOR TO BE AWARE OF ALL OVERHEAD LINES AT ALL TIMES, SO AS NOT TO DISTURB THEM.
19. WATER SHALL BE PROVIDED ONSITE AND USED TO CONTROL DUST DURING CONSTRUCTION OPERATIONS.
20. CONTRACTOR SHALL OBTAIN ANY NECESSARY PERMITS FROM THE CITY OF HUNTINGTON BEACH FOR ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
21. BLANKET PROTECTION SHALL BE PROVIDED FOR ALL UTILITY PIPES AND CONDUITS UNDER DRIVEWAYS, ROADWAYS, PARKING LOTS, AND OTHER VEHICULAR PATH OF TRAVEL PER APWA STANDARD PLAN 225-1 WHERE THE MINIMUM COVER OVER THE PIPES AND CONDUITS IS LESS THAN 36".
22. CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES SUCH AS MANHOLE COVERS, CLEAN OUTLET COVERS, METER BOXES, PULL BOXES, VALVE BOXES, AREA DRAINS, CATCH BASINS, FIRE HYDRANTS AND OTHER SURFACE UTILITIES TO NEW FINISH GRADE. NOT ALL EXISTING SURFACE UTILITIES MAY HAVE BEEN IDENTIFIED ON THESE PLANS THAT MAY REQUIRE ADJUSTMENT TO NEW GRADE, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTEND OF WORK REQUIRED.

CALIFORNIA 811
CALL UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA FOR UNDERGROUND LOCATING 48 HOURS BEFORE YOU DIG!
www.digalert.org

IMPORTANT NOTICE
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIGALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIGALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 811 TWO WORKING DAYS BEFORE YOU DIG

LEGEND:

GENERAL
- LIMIT OF WORK
- PROPERTY LINE

ANNOTATION
- 100.00XX — PROPOSED SURFACE ELEVATION/UTILITY ELEVATION
- (100.00)XX — EXISTING SURFACE ELEVATION/UTILITY ELEVATION
- XX — CONSTRUCTION NOTE
- 2.0% — FLOW (DIRECTION AND GRADE)
- 2:1 — SLOPE (DIRECTION AND RUN:RISE)

SITE
- BACK OF CURB/FACE OF CURB

EROSION CONTROL
- GRAVEL BAGS
- FIBER ROLL
- EXISTING DRAINAGE FLOW DIRECTION

GRADING
- 100 — PROPOSED MAJOR CONTOUR
- 102 — PROPOSED MINOR CONTOUR
- FLOW LINE
- GB — GRADE BREAK LINE
- R — RIDGE LINE
- SAWCUT / JOIN LINE

BASIS OF BEARINGS:

CALIFORNIA STATE PLAN COORDINATE SYSTEM – NAD 83 (2011) ZONE 6, DERIVED FROM OBSERVATIONS TAKEN ON JUNE 7, 2021 USING SOPAC'S CALIFORNIA REAL TIME NETWORK. THE BEARING BETWEEN CORS "SBCC" AND "CNPP", BEING N8°58'04"W, WAS USED AS THE BASIS OF BEARING FOR THIS SURVEY.

BENCHMARK:

THE ELEVATION OF 95.090 ON BENCHMARK NO. 2C-96-74 (DESCRIBED BY OCS 2003 – FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPED "2C-96-74" SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 4.5 FT CONCRETE CATCH BASIN WITH STEEL MANHOLE. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF BEACH BOULEVARD AND 44 FT. SOUTHERLY OF THE CENTERLINE OF MALVERN. MONUMENT IS SET LEVEL WITH THE SIDEWALK.) NAVD 1988 DATUM, 2005 YEAR LEVELED (1995 ADJUSTMENT), AS SHOWN IN ORANGE COUNTY PUBLIC WORKS VERTICAL CONTROL DATA SHEET WAS USED AS ELEVATION DATUM FOR THIS SURVEY.

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	(N)	NORTH
BW	BACK OF WALK	NTS	NOT TO SCALE
BLDG	BUILDING	PA	PLANTER AREA
BM	BENCH MARK	POC	POINT OF CONNECTION
BOS	BOTTOM OF STAIRS	PIV	POST INDICATOR VALVE
BMP	BEST MANAGEMENT PRACTICES	PCC	PORTLAND CEMENT CONCRETE
CB	CATCH BASIN	PRV	PRESSURE REDUCING VALVE
CI	CAST IRON	PVC	POLYVINYL CHLORIDE
CL, ℄	CENTER LINE	PL, ⅊	PROPERTY LINE
CMU	CONCRETE MASONRY UNIT	R=	RADIUS
CO	CLEANOUT	RCIP	RECTANGULAR CAST IRON PIPE
CONC	CONCRETE	RD	ROOF DRAIN
CF	CURB FACE	RW, R/W	RIGHT-OF-WAY
DW	DOMESTIC WATER	(S)	SOUTH
(E)	EAST	S=	SLOPE EQUALS
EG	EDGE OF GUTTER	SD	STORM DRAIN
EL., ELEV	ELEVATION	SSMH	SANITARY SEWER MANHOLE
ELEC	ELECTRIC, ELECTRICAL	SS	SANITARY SEWER
EX., EXIST.	EXISTING	STD	STANDARD
FDC	FIRE DEPARTMENT CONNECTION	SDMH	STORM DRAIN MANHOLE
FF	FINISHED FLOOR	TC	TOP OF CURB
FG	FINISHED GRADE (LANDSCAPE)	TEL	TELEPHONE
FS	FINISHED SURFACE (HARDSCAPE)	TG	TOP OF GRATE
FH	FIRE HYDRANT	TOS	TOP OF STAIRS
FL	FLOW LINE	TW	TOP OF WALL
FT	FOOT OR FEET	TS	TRAFFIC SIGNAL
FU	FIXTURE UNITS	TSB	TRAFFIC SIGNAL BOX
GV	GATE VALVE	TYP	TYPICAL
FW	FIRE WATER	TV	TELEVISION
GPM	GALLONS PER MINUTE	V.I.F.	VERIFY IN FIELD
HDPE	HIGH DENSITY POLYETHYLENE	VLT	VAULT
HP, (HP)	HIGH POINT	VCP	VITRIFIED CLAY PIPE
INV.	INVERT	(W)	WEST
LP, (LP)	LOW POINT	W	WATER
MAX.	MAXIMUM	WM	WATER METER
MIN.	MINIMUM	WV	WATER VALVE
MH	MANHOLE		

LEGEND:

- ASPHALT CONCRETE PAVEMENT COLD MILL AND OVERLAY
- CONCRETE PAVEMENT (CONCRETE MIX 560-C-3250)
- EXISTING BUILDING (SEE ARCHITECTURAL PLANS FOR MODERNIZATIONS)

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SHEET INDEX:

CIVIL DRAWINGS	
C0.01	TITLE SHEET
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.30	GRADING PLAN
C1.40	PAVING PLAN
C5.00	CIVIL DETAILS

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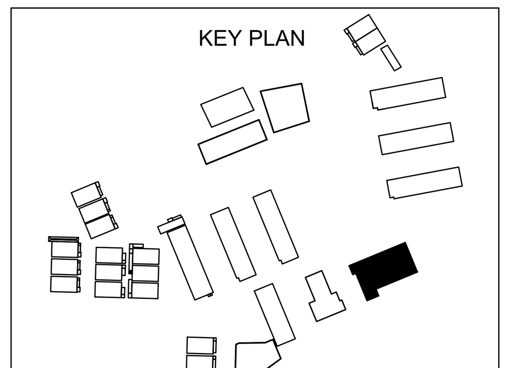
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS — DATE
- ◯ DSA PLAN CHECK
- ◯ DSA BACK CHECK
- ◯ BIDDING
- ◯ CONSTRUCTION

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

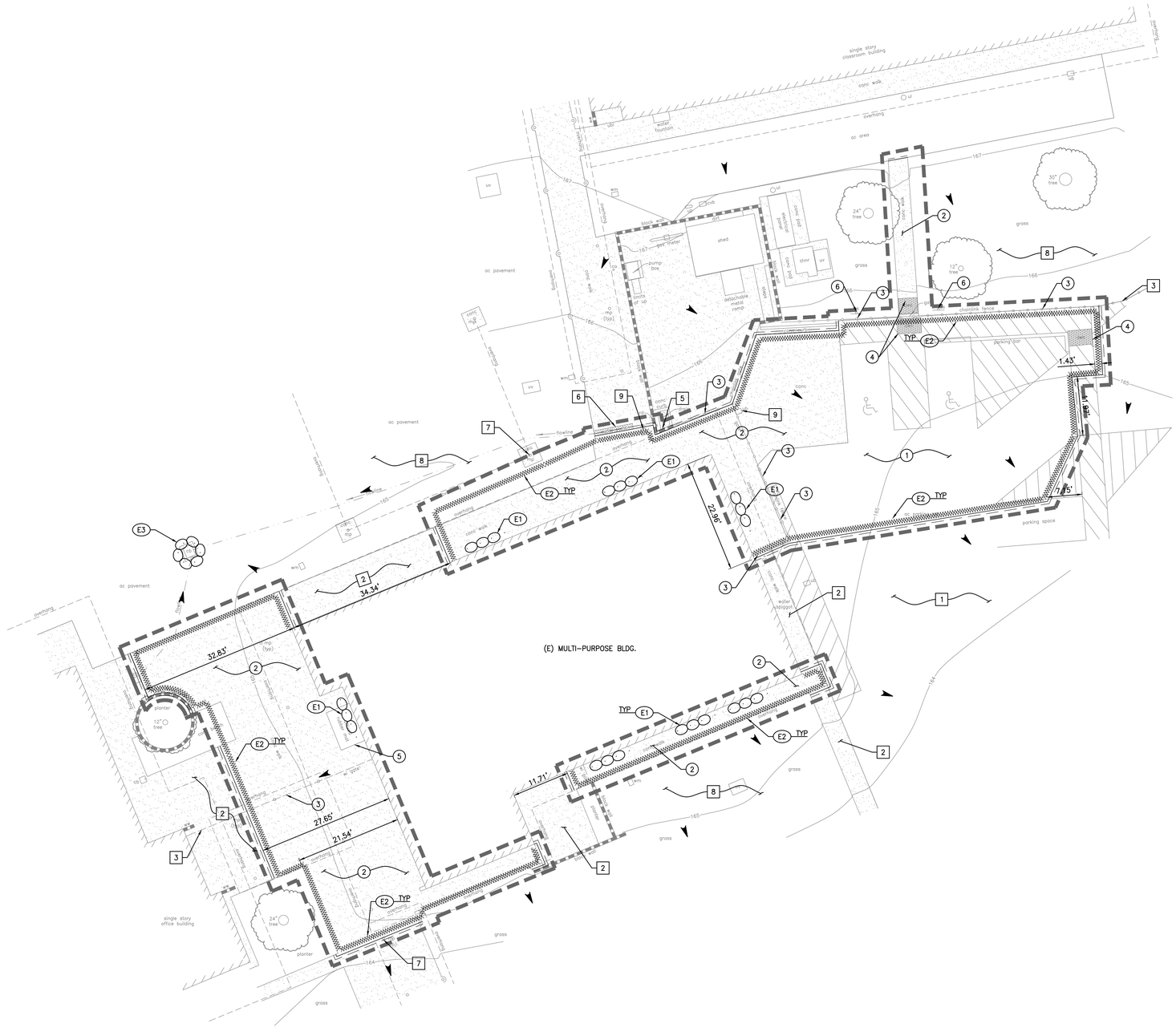
DSA BACKCHECK

CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

TITLE SHEET

Date	Project Number
10/19/2021	2100004
Scale	Drawing Number
AS NOTED	C0.01
Drawn: TN	Checked: JP

Drawing: P:\2021\2100004 -19- BPSD Emery ES MP Mod\DWG\SHEET\2100004C-C0.01TS.dwg Last Plotted: Friday, October 15, 2021 5:42:09 PM By: April Santonil



BMP NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL SILT AND MUD ON ADJACENT STREET(S), DUE TO CONSTRUCTION VEHICLES OR ANY OTHER CONSTRUCTION ACTIVITY, AT THE END OF EACH DAY, OR AFTER A STORM EVENT THAT CAUSES A BREECH IN INSTALLED CONSTRUCTION BMP'S WHICH MAY COMPROMISE STORM WATER QUALITY WITHIN ANY STREET(S).
2. ALL STOCKPILES OF SOIL AND/OR BUILDING MATERIALS THAT ARE INTENDED TO BE LEFT FOR A PERIOD GREATER THAN SEVEN CALENDAR DAYS ARE TO BE COVERED. ALL REMOVABLE BMP DEVICES SHALL BE IN PLACE AT THE END EACH WORKING DAY WHEN FIVE DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
3. A CONCRETE WASHOUT SHALL BE PROVIDED ON ALL PROJECTS WHICH PROPOSE THE CONSTRUCTION OF ANY CONCRETE IMPROVEMENTS WHICH ARE TO BE POURED IN PLACE ON SITE.
4. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER AFTER EACH RUN-OFF PRODUCING RAINFALL OR AFTER ANY MATERIAL BREACH IN EFFECTIVENESS.
5. ALL SLOPES THAT ARE CREATED OR DISTURBED BY CONSTRUCTION ACTIVITY MUST BE PROTECTED AGAINST EROSION AND SEDIMENT TRANSPORT AT ALL TIMES.
6. THE STORAGE OF ALL CONSTRUCTION MATERIALS AND EQUIPMENT MUST BE PROTECTED AGAINST ANY POTENTIAL RELEASE OF POLLUTANTS INTO THE ENVIRONMENT.

EROSION CONTROL NOTES:

1. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE GRADING PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES TO MEET "AS GRADED" CONDITIONS.
2. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR
3. WHEN THE INSPECTOR SO DIRECTS, A 12-INCH BERM SHALL BE MAINTAINED ALONG THE TOP OF THE SLOPE OF THOSE FILLS ON WHICH GRADING IS NOT IN PROGRESS.
4. STORM AND SEWER DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHALL BE PLUGGED WITH SANDBAGS.
5. EXCEPT WHEN THE INSPECTOR DIRECTS OTHERWISE, ALL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS FORECAST, AND SHALL BE MAINTAINED DURING THE RAINY SEASON (OCTOBER 15 TO APRIL 15).
6. SANDBAGS SHALL BE STOCKPILED ON SITE, READY TO BE PLACED IN POSITION WHEN RAIN IS FORECAST, OR WHEN THE INSPECTOR SO DIRECTS.
7. A "STANDBY EMERGENCY CREW" SHALL BE ALERTED BY THE PERMITTEE OR THE CONTRACTOR TO PERFORM EMERGENCY WORK DURING RAINSTORMS. THE PARTY TO BE CONTACTED IS:
   NAME: _____ (TO BE FILLED IN BY CONTRACTOR)
   PHONE NUMBER: _____

LEGEND:

- PROPERTY LINE
- LIMIT LINE OF EROSION CONTROL
- GRAVEL BAGS
- FIBER ROLL
- SURFACE FLOW DIRECTION
- SAWCUT LINE

GENERAL DEMOLITION NOTES:

1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN TO BE PROTECTED, RELOCATED AND/OR SALVAGED.
2. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
4. NOT ALL EXISTING SITE CONDITIONS AND IMPROVEMENTS MAY HAVE BEEN SHOWN ON DEMOLITION PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTENT OF DEMOLITION WORK REQUIRED FOR THE IMPROVEMENTS SHOWN ON THE CONTRACT PLANS.
5. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
7. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
8. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
9. DEMOLITION IS LIMITED TO WITHIN DEMOLITION LIMIT LINE UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK DEMOLITION OF ALL EXISTING IMPROVEMENTS REQUIRED FOR THE CONSTRUCTION OF THE NEW IMPROVEMENTS SHOWN ON THE CONTRACT PLANS, REGARDLESS OF IF THE DEMOLITION AND REMOVAL OF THE EXISTING IMPROVEMENTS REQUIRED FOR NEW CONSTRUCTION IS EXPLICITLY SHOWN ON THESE PLANS TO BE DEMOLISHED AND REMOVED.
11. DEMOLITION CALLOUTS IN THIS SECTION ARE REPRESENTATIVE OF WHAT IS TO BE DONE, NOT AN ITEMIZED ACCOUNTING FOR EACH PIPE, CATCH BASIN, MANHOLE, VAULT, ETC, THAT IS TO BE DEMOLISHED, REMOVED AND DISPOSED OF.

DEMOLITION NOTES:

PROTECT-IN-PLACE

1. ASPHALT PAVEMENT
2. CONCRETE PAVEMENT
3. CHAINLINK FENCE. PERIMETER FENCING PER ARCHITECTURAL PLANS.
4. TRUNCATED DOMES
5. CMU WALL
6. METAL PLATE
7. METAL POST
8. LANDSCAPING
9. UTILITY BOX

REMOVE & DEMOLISH

1. ASPHALT PAVEMENT. COLD MILL TOP 2" OF AC SURFACE. OVERLAY PER GRADING PLAN C1.30 AND PAVING PLAN C1.40.
2. CONCRETE PAVEMENT
3. CHAINLINK FENCE
4. TRUNCATED DOMES
5. RUBBER MAT
6. ADA SIGN POST AND FOOTING

EROSION CONTROL NOTES:

* FINAL BMP LOCATION TO BE DETERMINED BY THE CONTRACTOR.

E1 PLACE GRAVEL BAGS TRIPLE ROW PER CASQA BMP FACT SHEET SE6.

E2 PLACE FIBER ROLL PER CASQA BMP FACT SHEET SE5.

E3 STORM DRAIN INLET PROTECTION PER CASQUA BMP FACT SHEET SE10.

BMP NOTES:

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA 2009, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTORS):

EROSION CONTROL

EC1-SCHEDULING
EC2-PRESERVATION OF EXISTING VEGETATION
EC3-HYDRAULIC MULCH
EC4-HYDROSEEDING
EC5-SOIL BINDERS
EC6-STRAW MULCH
EC7-GEOTEXTILES
EC8-WOOD MULCHING
EC9-EARTH DIKES AND DRAINAGE SWALES
EC10-VELOCITY DISSIPATION DEVICES
EC11-SLOPE DRAINS
EC12-STREAMBANK STABILIZATION
EC13-POLYCRYLAMIDE

TEMPORARY SEDIMENT CONTROL

SE1-SILT FENCE
SE2-SEDIMENT BASIN
SE3-SEDIMENT TRAP
SE4-CHECK DAM
SE5-FIBER ROLLS
SE6-GRAVEL BAG BERM
SE7-STREET SWEEPING AND VACUUMING
SE8-SANDBAG BARRIER
SE9-STRAW BALE BARRIER
SE10-STORM DRAIN INLET PROTECTION
SE11-CHEMICAL TREATMENT

EQUIPMENT TRACKING CONTROL

TC1-STABILIZED CONSTRUCTION ENTRANCE/EXIT
TC2-STABILIZED CONSTRUCTION ROADWAY
TC3-ENTRANCE/OUTLET TIRE WASH

WIND EROSION CONTROL

WE1-WIND EROSION CONTROL

NON-STORMWATER MANAGEMENT

NS1-WATER CONSERVATION PRACTICES
NS2-DEWATERING OPERATIONS
NS3-PAVING AND GRINDING OPERATIONS
NS4-TEMPORARY STREAM CROSSING
NS5-CLEAR WATER DIVERSION
NS6-ILLICIT CONNECTION/DISCHARGE
NS7-POTABLE WATER/IRRIGATION
NS8-VEHICLE AND EQUIPMENT CLEANING
NS9-VEHICLE AND EQUIPMENT FUELING
NS10-VEHICLE AND EQUIPMENT MAINTENANCE
NS11-PILE DRIVING OPERATIONS
NS12-CONCRETE CURING
NS13-CONCRETE FINISHING
NS14-MATERIAL OVER WATER
NS15-DEMOLITION ADJACENT TO WATER
NS16-TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL

WM1-MATERIAL DELIVERY AND STORAGE
WM2-MATERIAL USE
WM3-STOCKPILE MANAGEMENT
WM4-SPILL PREVENTION AND CONTROL
WM5-SOLID WASTE MANAGEMENT
WM6-HAZARDOUS WASTE MANAGEMENT
WM7-CONTAMINATED SOIL MANAGEMENT
WM8-CONCRETE WASTE MANAGEMENT
WM9-SANITARY/SEPTIC WASTE MANAGEMENT
WM10-LIQUID WASTE MANAGEMENT

N

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ALI KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA

DATE SIGNED: 10/15/2021

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NO.	REMARKS	DATE

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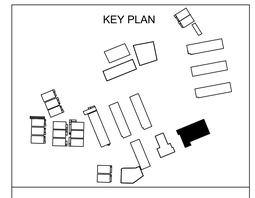
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

DEMOLITION & EROSION CONTROL PLAN

Date	Project Number
10/19/2021	2100004
Scale	Drawing Number
AS NOTED	C1.10
Drawn / Checked	
TN / JP	

Drawing: P:\2021\2100004 - City BPSD Emery ES MP Mod\CMD\CHRETI\2100004C-C1.10COVER.dwg Last Modified: Friday, October 15, 2021 5:42:18 PM By: April Santoyo

LEGEND:

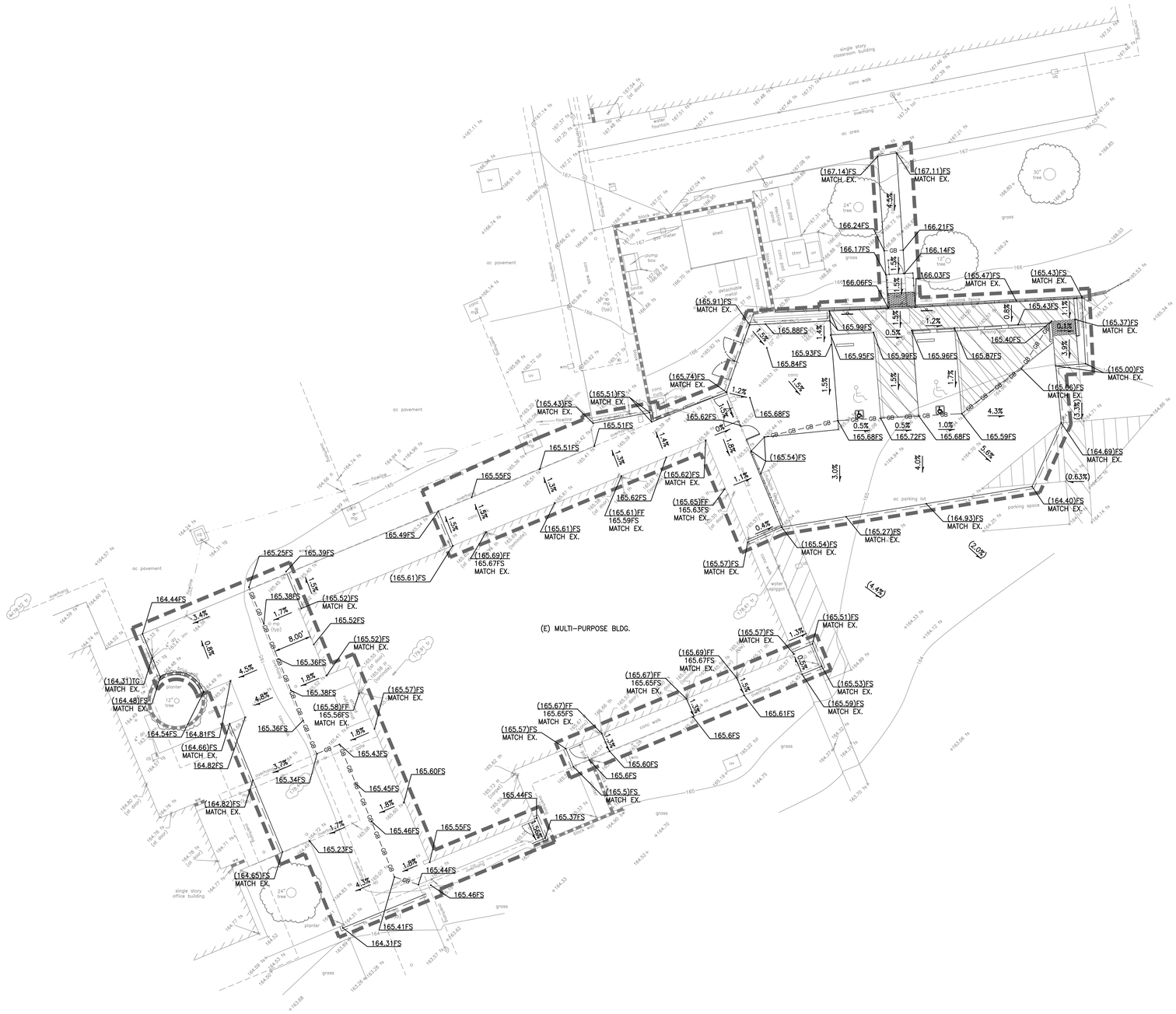
PROPERTY LINE

LIMIT OF WORK

NOTE:

PERIMETER FENCING IMPROVEMENTS PER ARCHITECTURAL PLANS.

SEE ARCHITECTURAL SHEET A0.3 FOR ACCESSIBLE PATH(S) OF TRAVEL STRIPING FOR AREA OF WORK SHOWN HEREON.



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PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMO No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA

DATE SIGNED: 10/15/2021

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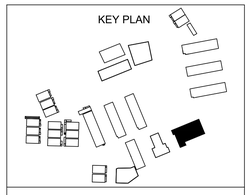
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
◯ DSA PLAN CHECK	
◯ DSA BACK CHECK	
◯ BIDDING	
◯ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

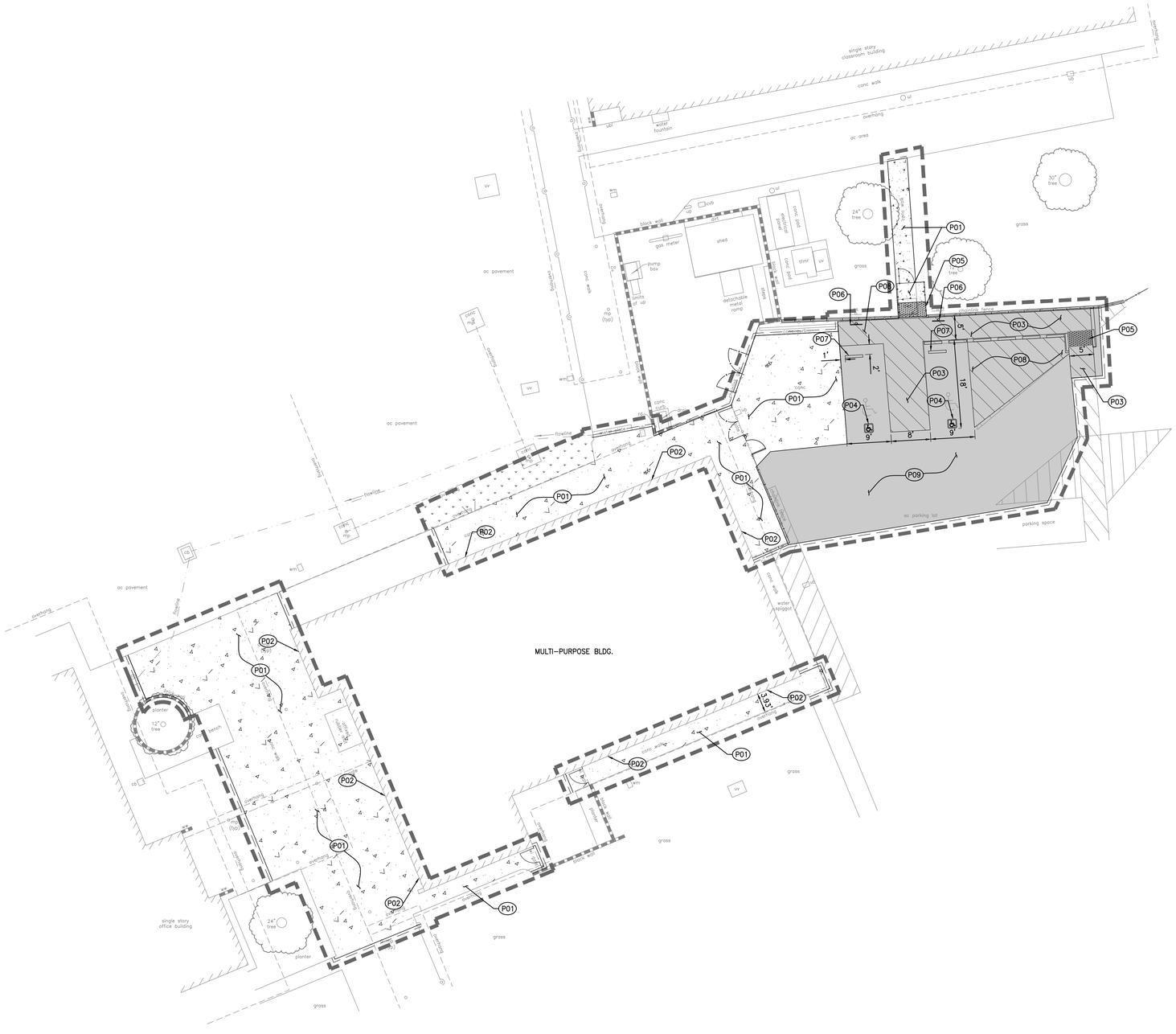
DSA BACKCHECK

CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

GRADING PLAN

Date	Project Number
10/19/2021	2100004
Scale	Drawing Number
AS NOTED	C1.30
Drawn TN	Checked JP

Drawing: P:\2021\2100004 -19- BPSD Emery ES MP Mod\DWG\SHEETS\2100004C-C1.3000.dwg Last Plotted: Friday, October 15, 2021 5:42:24 PM By: April Santoni



LEGEND:

- PROPERTY LINE
- LIMIT LINE OF PAVING
- CONCRETE PAVING (REFER TO SHEET C5.00 FOR DETAILS)
- ASPHALT COLD MILL AND OVERLAY
- PA — PLANTER AREA/LANDSCAPE REPLACEMENT

PAVING CONSTRUCTION NOTES:

- P01 CONCRETE PAVEMENT PER DETAIL 1/C5.00.
- P02 ISOLATION JOINT AT STRUCTURE PER DETAIL 2/C5.00.
- P03 ACCESSIBLE CROSS WALK STRIPING PER ARCHITECTURAL PLANS.
- P04 ACCESSIBLE 90° PARKING STALL STRIPING PER ARCHITECTURAL PLANS.
- P05 TRUNCATED DOMES PER ARCHITECTURAL PLANS.
- P06 ACCESSIBLE PARKING SIGNAGE PER ARCHITECTURAL PLANS.
- P07 WHEEL STOP PER ARCHITECTURAL PLANS.
- P08 STRIPE TO MATCH EXISTING.
- P09 AC COLD MILL AND OVERLAY

NOTE:

PERIMETER FENCING IMPROVEMENTS PER ARCHITECTURAL PLANS.

SEE ARCHITECTURAL SHEET A0.3 FOR ACCESSIBLE PATH(S) OF TRAVEL STRIPING FOR AREA OF WORK SHOWN HEREON.

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA — DATE SIGNED: 10/15/2021

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DRAWING STATUS — DATE
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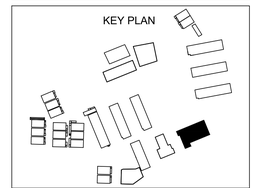
- ◯ BIDDING
- ◯ CONSTRUCTION

KEY PLAN



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6885 ORANGETHORPE AVE.
BUENA PARK, CA

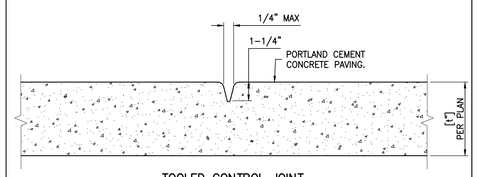
DSA BACKCHECK

CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

PAVING PLAN

Date	Project Number
10/19/2021	2100004
Scale: AS NOTED	Drawing Number
Drawn: TN / Checked: JP	C1.40

Drawing: P:\2021\2100004 -19- BPSD Emery ES MP Mod\DWG\SHEET\2100004C-C1.40PV.dwg Last Plotted: Friday, October 15, 2021 5:42:28 PM By: April Santosuosso



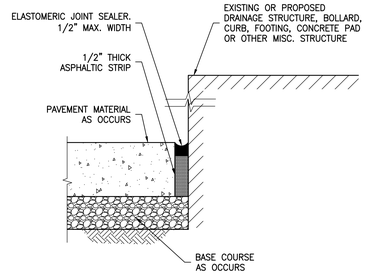
TOOLED CONTROL JOINT

NOTES:

1. CONTROL JOINTS SHALL BE CONSTRUCTED PER S.S.P.W.C.
2. CONSTRUCT CONTROL JOINTS WITHIN 24 HOURS OF POUR.
3. SEE PLAN FOR LOCATION OF CONTROL JOINTS.

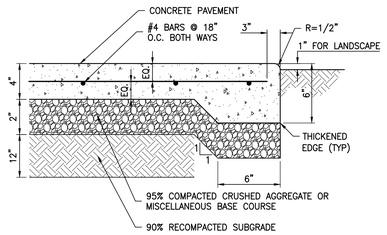
3 CONTROL JOINT FOR CONCRETE PAVEMENT

N.T.S.



2 ISOLATION JOINT AT STRUCTURE

N.T.S.



NOTES:

1. ALL TREAD SURFACES SHALL BE SLIP-RESISTANT.
2. REFER TO CIVIL SPECIFICATIONS FOR COLOR, PATTERN, TEXTURE, AND FINISH.
3. CONTRACTOR TO MATCH EXISTING SCORE PATTERN WHERE PROPOSED CONSTRUCTION JOINTS ARE NOT SHOWN PER PLAN. SEE DETAIL 3 HEREON.
4. CONCRETE MIX PER 560-C-3250 PER SSPWC.

1 CONCRETE WALK SECTION

N.T.S.

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA DATE SIGNED: 10/15/2021

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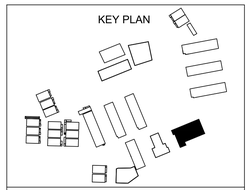
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
◯ DSA PLAN CHECK	
◯ DSA BACK CHECK	
◯ BIDDING	
◯ CONSTRUCTION	

KEY PLAN



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6885 ORANGETHORPE AVE.
BUENA PARK, CA

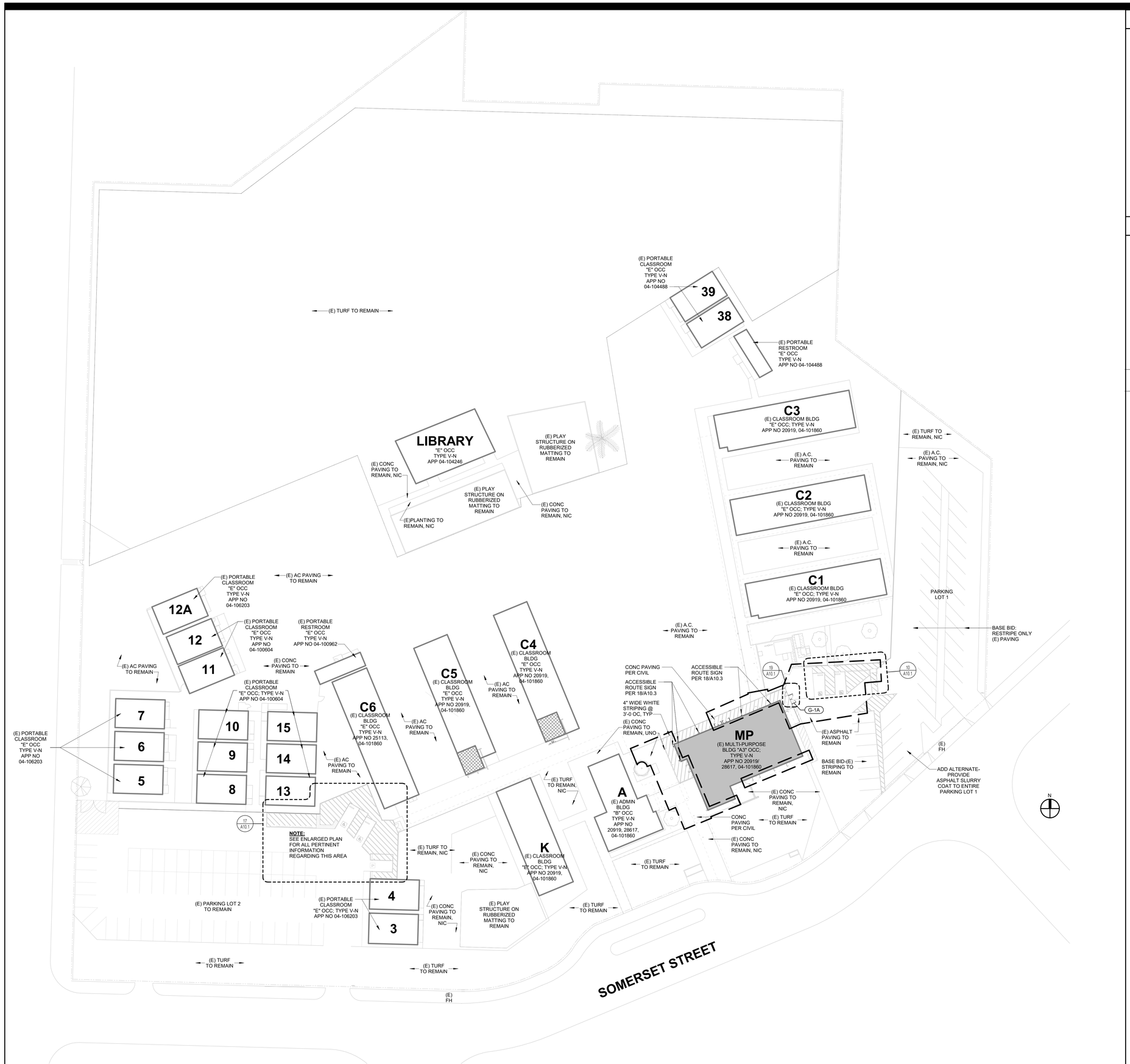
DSA BACKCHECK

CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

DETAILS

Date 10/19/2021	Project Number 2100004
Scale AS NOTED	Drawing Number C5.00
Drawn TN / Checked JP	

Drawing: P:\2021\2100004 -19- BPSD Emery ES MP Mod\DWG\SHEETS\2100004C-C5.00DT.dwg Last Plotted: Friday, October 15, 2021 5:42:13 PM By: April Sandoval



GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR 6'-0" HIGH TEMPORARY CONSTRUCTION BARRIER WITH VISION SCREEN AT STAGING, STORAGE AND CONSTRUCTION AREA WITH SIGNAGE EVERY 20'-0" TO WARN STUDENTS OF CONSTRUCTION AREA.
2. CONTRACTOR TO BRING IN OFFICE TRAILER TO CONSTRUCTION AREA.
3. CONTRACTOR SHALL ACCESS THE SITE FROM SOMERSET ST. ANY DAMAGE TO FIRE LANE WILL BE AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR TO REPAIR BACK TO EXISTING CONDITIONS ALL LAYDOWN AREAS AT THE END OF CONSTRUCTION. THIS INCLUDES LANDSCAPE AREAS AND ANY BROKEN SPRINKLERS, VALVE BOXES, CONCRETE, ASPHALT, ETC.
5. CONTRACTOR SHALL REPLACE, RECONSTRUCT AND REPAIR ALL EXISTING WORK THAT IS IMPACTED, DAMAGED, OR DESTROYED AS A RESULT OF ANY CONTRACTOR WORK INCLUDING, BUT NOT LIMITED TO, HARDSCAPING, SIDEWALKS, IRRIGATION SYSTEMS, LANDSCAPING, LAWNS, STRUCTURES AND UTILITIES - ALL TO THE SATISFACTION OF THE DISTRICT.
6. WHERE ASPHALT OR CONCRETE IS BEING REPATCHED, CONTRACTOR SHALL PROVIDE EVEN AND STRAIGHT LINE CUTS WITH 2-FOOT STRAIGHT SLURRY SEAL SURFACE PATCH ON BOTH SIDES OF CUT.
7. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON SITE TO AVOID EXISTING DUCTS, PIPING OR CONDUITS, ETC., AND TO PREVENT HAZARDS TO PERSONNEL AND/OR DAMAGE TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN AND INSTALLED BY ANY OTHER CONTRACTS. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY ELEMENTS FOR CONSTRUCTION SAFETY.
8. GATES IN PATH OF TRAVEL SHALL COMPLY WITH EXIT DOOR REQUIREMENTS WITH PROPER LEVER HARDWARE AND KICK PLATES.

LEGEND

— — — —	PROPERTY LINE
▬ ▬	LIMIT OF WORK
- - - - - -	LINE OF ROOF, SKYLIGHT, OR SOFFIT OVERHEAD - SHOWN DASHED
+	FIRE HYDRANT
▭	(E) BUILDING, NOT UNDER SCOPE OF WORK
■	BUILDING UNDER SCOPE OF WORK

PAVEMENT MARKINGS

- **Accessible Parking:**
- Accessible parking spaces serving a particular building or facility shall be located on the shortest accessible route to an entrance complying with ***CBC Section 11B-208.3.1***.
- Accessible parking spaces serving more than one accessible entrance shall be dispersed and located on the shortest accessible route to the accessible entrances.
- Accessible parking spaces in a parking facility not serving a particular building or facility shall be located on the shortest accessible route to an accessible pedestrian entrance of the parking facility. ***CBC Section 11B-208.3.1***
- Minimum number of required accessible parking spaces shall be provided in accordance with ***CBC Table 11B-208.2*** for each parking facility provided on a site.
- For every six or fraction of six accessible parking spaces, at least one shall be an accessible van parking space. ***CBC Section 11B-208.2.4***
- Accessible parking spaces and access aisles shall comply with ***CBC Section 11B-502*** and shall be dimensioned to the centerline of the marked lines as follows:
  - Parking spaces and access aisles shall be marked according to ***CBC Figures 11B-502.2, 11B-502.3, and 11B-502.3.3***. Their surfaces shall comply with ***CBC Section 11B-302*** and shall be at the same level, with slopes not steeper than 1:48 in any direction. ***CBC Section 11B-502.4***
  - Parking spaces shall be 9'x18' minimum and van parking spaces shall be 12'x18' minimum with an adjacent access aisle of 5'x18' minimum . Access aisles shall be placed on either side of the standard parking spaces, but only on the passenger side of the van parking spaces. Van parking spaces shall be permitted to be 9'x18' minimum where the access aisle is 8'x18' minimum.
  - Access aisles shall be marked by a blue painted borderline around their perimeter. The area within the blue borderlines shall be marked with hatched lines a maximum of 36" on center in a color contrasting with that of the aisle surface, preferably blue or white. Access aisle markings may extend beyond the minimum required length. ***CBC Section 11B-502.3.3***
  - Access aisles (accessible parking spaces as well – similar application) shall not overlap the vehicular way. ***CBC Section 11B-502.3.4***
  - A vertical clearance of 8'-2" minimum shall be provided for accessible parking spaces, access aisles, and vehicular routes serving them. ***CBC Section 11B-502.5.***
- **Passenger Drop-off and Loading Zones:**
- At least one passenger loading zone shall be provided in every continuous 100 linear feet of loading zone space, or fraction thereof, complying with ***CBC Sections 11B-209 and 11B-503*** as follows:
  - Vehicle pull-up spaces shall be 8' x 20' minimum.
  - Access aisles shall be 5' wide minimum x full length of vehicle pull-up spaces they serve and shall be adjacent and parallel to the vehicle pull-up spaces. They shall be at the same level with each other and with slopes not steeper than 1:48 in any direction. Access aisle shall adjoin an accessible route and shall not overlap the vehicular way.
  - Access aisles for passenger drop-off and loading zone shall be marked with a painted borderline around their perimeter. The area within the borderlines shall be marked with hatched lines a maximum of 36" on center in a color contrasting with that of the aisle surface. (Blue perimeter lines with blue interior hatch lines are preferred for concrete surfaces and blue perimeter lines with white interior hatch lines are preferred for asphalt surfaces. Where white hatch lines are used, hatch lines shall be interrupted at 12" high 'No Parking' text so that legibility is maintained.) ***CBC Section 11B-503.3.3***
  - A vertical clearance of 9'-6" minimum shall be provided for vehicle pull-up spaces, access aisles, and a vehicular route serving them connecting a vehicular entrance and a vehicular exit. ***CBC Section 11B-503.5***

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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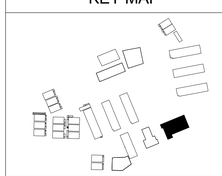
NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

SITE PLAN - OVERALL

Date 10/19/2021	Project Number 21009
Scale 1" = 30'-0"	Drawing Number A1.1
Drawn Author	Checked Checker

SITE PLAN - OVERALL 1" = 30'-0" 10

PRINT DATE: 10/22/2021 4:47:31 PM
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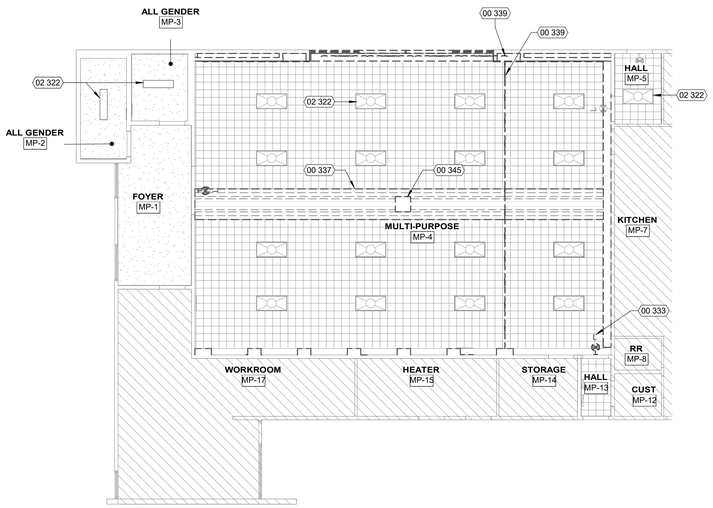
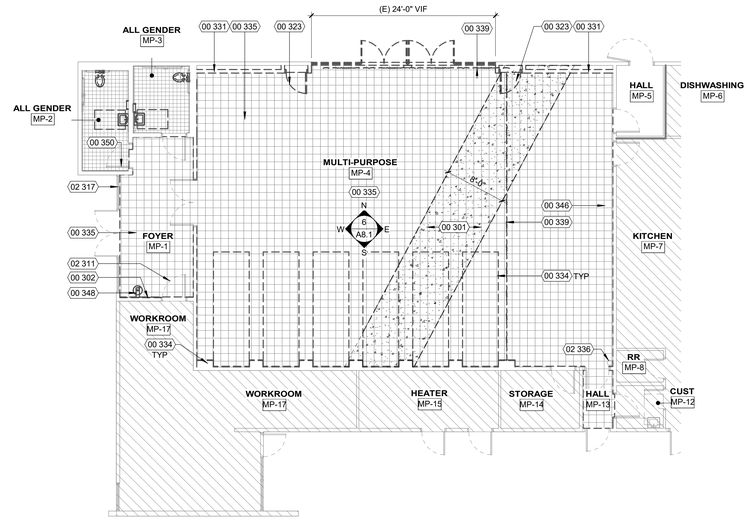


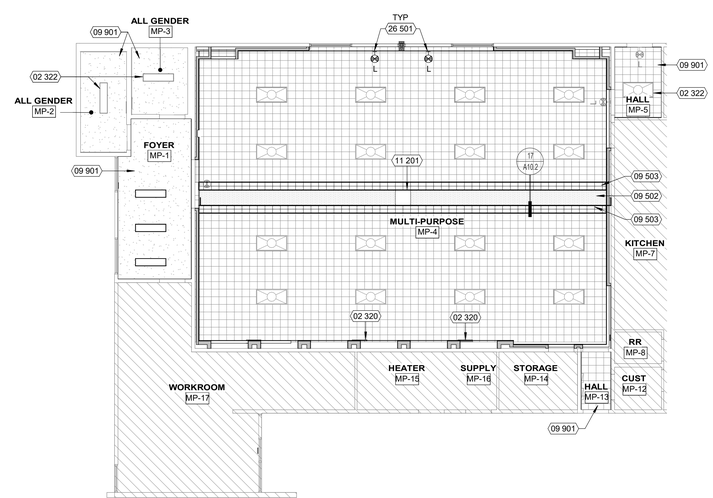
MULTI-PURPOSE ROOM DEMOLITION REFLECTED CEILING PLAN

1/8" = 1'-0" 18



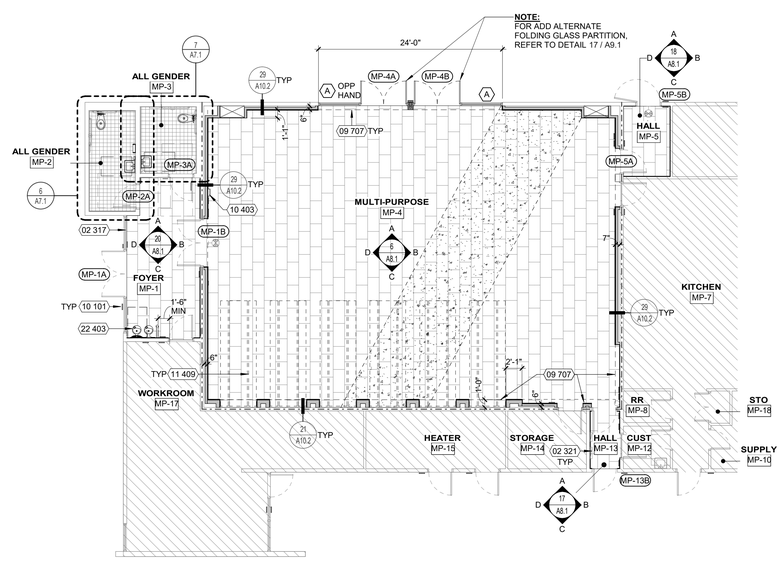
MULTI-PURPOSE ROOM DEMOLITION FLOOR PLAN

1/8" = 1'-0" 8



MULTI-PURPOSE ROOM ALTERATION REFLECTED CEILING PLAN

1/8" = 1'-0" 20



MULTI-PURPOSE ROOM ALTERATION FLOOR PLAN

1/8" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
00 301	REMOVE PORTION CRACKED CONC SLAB ON GRADE
00 302	REMOVE CERAMIC TILE WAINSCOT/MORTAR BED
00 323	REMOVE DOOR
00 331	REMOVE FURRING
00 333	REMOVE (E) ILLUMINATED EXIT SIGN AND CONDUIT BACK TO THE NEAREST JUNCTION BOX
00 334	REMOVE IN-WALL CAFETERIA TABLE/POCKET/POCKET FRAMING
00 335	REMOVE FLOORING, PATCH/REPAIR (E) CONC SLAB AS REQ'D
00 337	REMOVE GYP BD SOFFIT
00 339	REMOVE DRAPERY/TRACK
00 345	REMOVE PROJECTOR, SAVE FOR RE-INSTALLATION
00 346	REMOVE WALL FINISHES DOWN TO STUDS
00 348	REMOVE (E) DRINKING FOUNTAIN
00 350	REMOVE DOOR CLOSER DUE TO INSUFFICIENT PUSH SIDE DOOR CLEARANCE
02 311	(E) DOOR TO REMAIN
02 317	(E) STOREFRONT TO REMAIN
02 320	(E) HVAC GRILLES, RELOCATE TO FACE OF FURRING; CLEAN AND PAINT P-1
02 321	(E) ELECTRICAL PANEL TO REMAIN, PROTECT IN PLACE
02 322	(E) LIGHT FIXTURE TO REMAIN, CLEAN HOUSING/LENS AND RELAMP TO MATCH EXISTING
02 336	(E) FIRE EXTINGUISHER TO REMAIN
09 502	GYPSUM BOARD SOFFIT
09 503	12" X 12" ACOUSTIC TILES TO MATCH (E)
09 707	EXTENT OF FURRING WALL ABOVE, SEE INTERIOR ELEVATIONS
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.5
10 403	FIRE EXTINGUISHER (2A-10B:C) IN SEMI-RECESSED CABINET PER 24/A10.2
11 201	REATTACH (E) PROJECTOR, VERIFY REQ'D SUPPORT BRACKET LENGTH
11 409	DOUBLE STACKING IN-WALL CAFETERIA TABLE/POCKET FRAMING
22 403	HI-LO DRINKING FOUNTAIN (SEE DETAIL 15/A10.2)
26 501	SELF-LUMINOUS EXIT SIGN

DEMOLITION LEGEND

= = = = = = BUILDING ELEMENT TO BE DEMOLISHED, REMOVED, AND/OR RELOCATED

NOTE: NO DEMOLITION SHALL BEGIN UNTIL PLANS HAVE BEEN APPROVED BY DSA

(E) TO REMAIN

GENERAL NOTES

1. FOR ALL REQUIRED SIGNAGE INCLUDING ROOM NAME/NUMBER, SEE SHEET A0.5
2. FOR TYPICAL DOOR CLEARANCES, SEE 1 / A10.1
3. DIMENSIONS OF WALLS ARE FROM FACE OF STUD UNLESS OTHERWISE NOTED.
4. PAINT ALL INTERIOR WALLS P-1 UNO, SEE FINISH LIST FOR MORE INFO.
5. DIMENSIONS OF WALLS ARE FROM FACE OF STUD UNLESS OTHERWISE NOTED.
6. SEE STRUCTURAL DRAWINGS FOR MORE INFO.

FINISH LIST

LUXURY VINYL TILE

LVT-1	MOHAWK GROUP	LIVING LOCAL 12" X 24" "WEATHERING" - 960
LVT-2	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "SPORTY BLUE" - 620
LVT-3	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "MASCAL" - 585

WALL BASE

B-1	JOHNSONITE	4" COVED, COLOR: 23 "VAPOR GREY" CG

VINYL WALLCOVERING TACKBOARD

W/ VINYL FABRIC-WRAPPED EDGES @ INTERIOR SEAMS AND VINYL PERIMETER TRIM

VWC-1	ALL	KOROSEAL	SPELLBOUND "DELTA" 8821-71

PAINT

P-1	TYP WALLS, CEILINGS, SOFFITS, INT. DOORS/DOOR FRAMES	VISTA PAINT	"COOL ELEGANCE" 0517 (SEMI GLOSS DOORS/FRAMES & EGGSHELL FIELD)
P-2	ACCENT COLOR AS INDICATED	VISTA PAINT	"CARIBBEAN CURRENT" 0598 (SEMI GLOSS DOORS/ FRAMES & EGGSHELL FIELD)
P-3	TABLE POCKETS	RAL	K1 CLASSIC "DISTANT BLUE" 5023

PLASTIC LAMINATE

PLAM-1	FOLDING LUNCH TABLES/BENCHES	WILSONART	"WHITE TIGRIS" 4783-60

FRP

FRP-1	HALLWAY WALLS, TYP	MARLITE	SMOOTH S 100 S2/S WHITE W/ WHITE PVC TRIM

WOOD WALL PLANKS

WD-1	FOYER DECORATIVE WALL	STIKWOOD	RECLAIMED WEATHERED WOOD WHITE

RCP LEGEND

- (E) 12" x 12" ACOUSTIC CEILING TILES TO REMAIN, PAINT P-1
- 12" x 12" ACOUSTIC CEILING TILES, PAINT P-1
- PATCH/REPAIR (E) GYP BD CEILING AS REQ'D, PAINT P-1
- PATCH/REPAIR (E) EXT CEMENT PLASTER CEILINGS AS REQ'D, PAINT P-1
- (E) LIGHT FIXTURES TO REMAIN, CLEAN LENS/RELAMP
- (E) MECHANICAL GRILLES TO REMAIN, CLEAN AND PAINT P-1
- (E) CEILING ACCESS PANEL TO REMAIN, PAINT P-1
- (E) ILLUMINATED EXIT SIGN TO REMAIN
- SELF-ILLUMINATED EXIT SIGN

ALTERATION FLOOR PLAN LEGEND

- ACCESSIBLE DOOR CLEARANCES PER 1 / A10.1
- INTERIOR ELEVATION REFERENCE
  - X = INTERIOR ELEVATION NUMBER
  - AX.XX = SHEET NUMBER
  - A/B/C/D = INTERIOR ELEVATION VIEW DESIGNATION
- A101A — DOOR NUMBER, SEE DOOR SCHEDULE
- A — WINDOW OR STOREFRONT, SEE WINDOW SCHEDULE
- LINE OF ROOF, SKYLIGHT, OR SOFFIT OVERHEAD
- (E) 1 HOUR OCCUPANCY SEPARATION
- 5/8" TYPE 'X' GYP BD ON WOOD STUD FURRING, RELOCATE (E) DEVICES TO NEW FINISH SURFACE; SEE INTERIOR ELEVATIONS FOR EXTENT OF TACK BOARD
- (E) WALL TO REMAIN, PROTECT IN PLACE
- NOT IN CONTRACT
- LVT PER FINISH LIST THIS SHEET
- CONCRETE SLAB INFILL PER 1/S1.1

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REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

STUDIO W ARCHITECTS

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400 Spectrum Center Drive, Suite 1640
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA — DATE SIGNED 10/15/2021	

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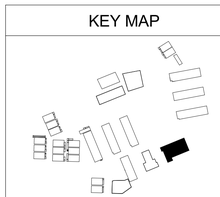
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
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BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

DEMOLITION/ ALTERATION FLOOR PLANS/RCPS

Date 10/19/2021	Project Number 21009
Scale As indicated	Drawing Number A2.1
Drawn / Checked	
Author / Checker	

PRINT DATE: 10/22/2021 4:47:36 PM
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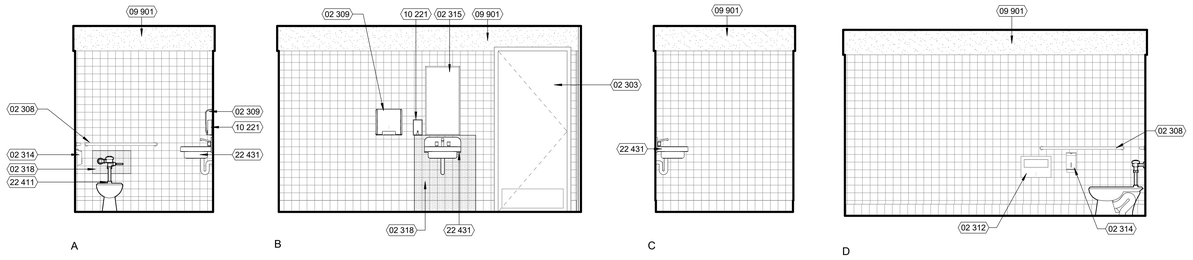
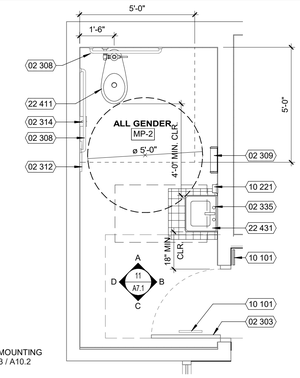


NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

INTERIOR ELEVATIONS - ALL GENDER RESTROOM MP-2 3/8" = 1'-0" 11

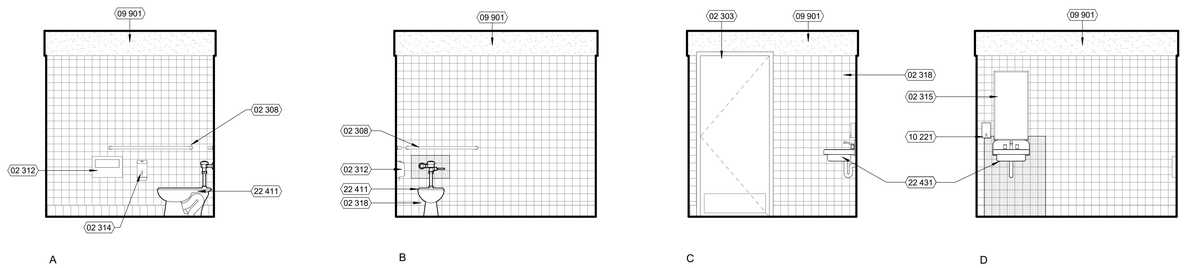


NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

ENL'D ALTERATION FLOOR PLAN-ALL GENDER RR MP-2 3/8" = 1'-0" 6

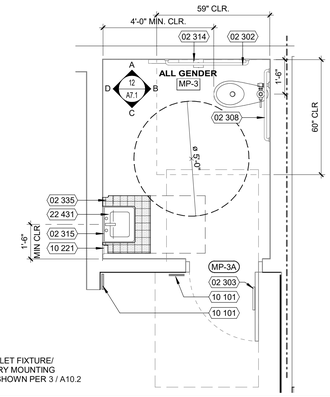
KEYNOTES

NUMBER	NOTE
02 302	(E) 42" STAINLESS STEEL GRAB BAR WITH SNAP FLANGE TO REMAIN
02 303	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 308	(E) 36" STAINLESS STEEL GRAB BAR WITH SNAP FLANGE BOBRICK B-5806 TO REMAIN
02 309	(E) SOAP DISPENSER TO REMAIN
02 311	(E) DOOR TO REMAIN
02 312	(E) SURFACE MOUNTED TOILET SEAT COVER DISPENSER TO REMAIN
02 314	(E) RECESSED MULTI-ROLL TOILET TISSUE DISPENSER BOBRICK B-3888 TO REMAIN
02 315	(E) GLASS MIRROR WITH STAINLESS STEEL ANGLE FRAME BOBRICK B-290 TO REMAIN, PROTECT IN PLACE
02 318	(E) CERAMIC WALL TILE TO REMAIN, PATCH/REPAIR AS REQ'D
02 323	(E) WATER CLOSET TO REMAIN
02 324	(E) LAVATORY TO REMAIN
02 325	(E) PAPER TOWEL DISPENSER TO REMAIN
02 326	(E) SIGNAGE TO REMAIN
02 328	(E) URINAL TO REMAIN
02 329	(E) CERAMIC TILE WALL FINISH TO REMAIN
02 330	(E) TOILET PARTITION TO REMAIN
02 331	(E) FREE STANDING TRASH RECEPTACLE TO REMAIN
02 333	(E) ACCESSIBLE URINAL TO REMAIN
02 334	(E) SIGNAGE TO REMAIN
02 335	(E) PATCH/REPAIR AREA AS REQUIRED TO MATCH ADJ. FINISH IF DAMAGED DUE TO RENOVATION
02 337	GRAB BAR MAY BE SHIFTED TO OPEN SIDE OF STALL ADJACENT TO THE FLUSH VALVE IF THERE IS AN INABILITY TO PROVIDE A 1-1/2" MINIMUM CLEARANCE BETWEEN THE FLUSH VALVE & GRAB BAR. PATCH/REPAIR AS REQ'D. MATCH (E) ADJACENT TILE/GROUT.
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.5
10 221	SOAP DISPENSER
22 411	FLOOR MOUNTED WATER CLOSET PER PLUMBING DRAWINGS
22 431	LAVATORY PER PLUMBING DRAWINGS



NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

INTERIOR ELEVATIONS - ALL GENDER RESTROOM MP-3 3/8" = 1'-0" 12



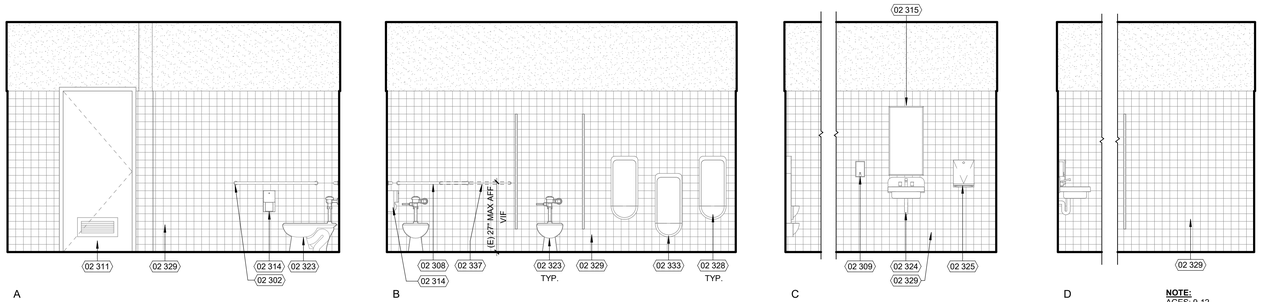
NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

ENL'D ALTERATION FLOOR PLAN-ALL GENDER RR MP-3 3/8" = 1'-0" 7

RESTROOM GENERAL NOTES

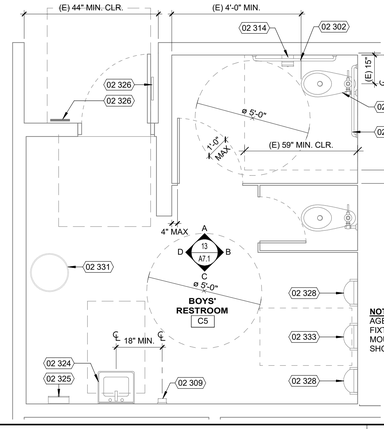
GENERAL
1. DIMENSIONS
   A. ALL MINIMUM CLEARANCE DIMENSIONS FOR PLUMBING FIXTURES ARE FROM FACE OF WALL FINISH TO CENTER OF FIXTURE, U.O.N.
   B. ALL DIMENSIONS MARKED "MIN. CLR" OR "CLR." ARE TO/ FROM FACE OF WALL FINISH (F.O.F.)
2. SEE FINISH LIST FOR INTERIOR FINISHES.
3. ALL DRINKING FOUNTAIN ALCOVES TO BE FINISHED WITH WATER RESISTANT WALL MATERIAL. SEE FINISH LIST AND INTERIOR ELEVATIONS.

TOILET ACCESSORIES
1. TOILET ACCESSORIES LOCATED ON OR WITHIN WALLS SHALL BE INSTALLED AND SEALED TO PROTECT STRUCTURAL ELEMENTS FROM MOISTURE (CBC SECTION 1210.2.2)
2. PLUMBING FIXTURES TO HAVE SOLID BLOCKING AS REQUIRED BY CODE



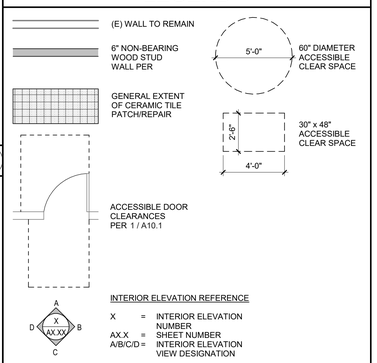
NOTE:
AGES: 9-12
TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

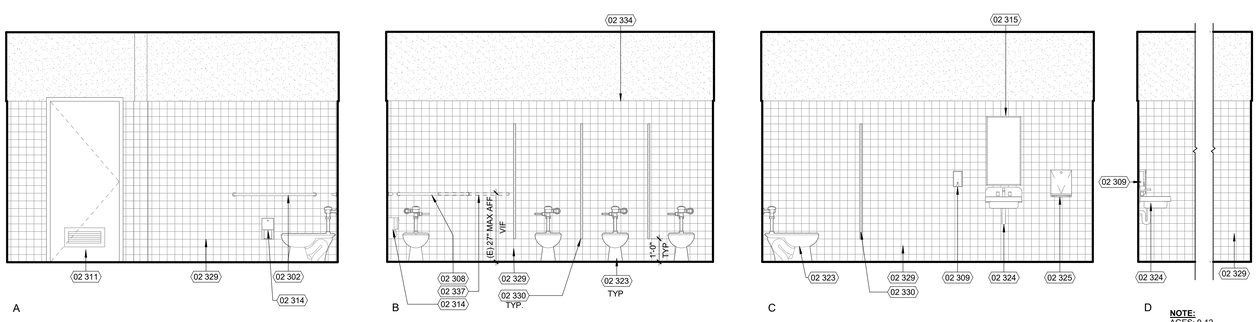
BOYS RESTROOM C5 3/8" = 1'-0" 13



NOTE:
AGES 9-12 TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

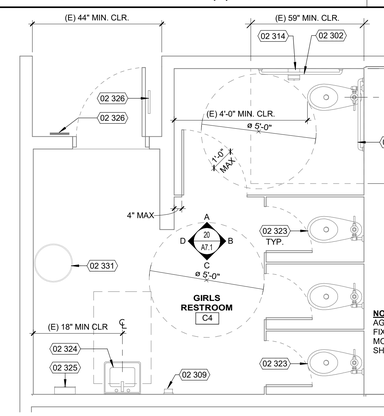
ENL'D FLOOR PLAN - BLDG C-5 - (E) BOYS' RESTROOM 3/8" = 1'-0" 8





NOTE:
AGES: 9-12
TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

GIRLS RESTROOM C4 3/8" = 1'-0" 20



NOTE:
AGES 9-12 TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 3 / A10.2

ENL'D FLOOR PLAN - BLDG C-4 - (E) GIRLS RESTROOM 3/8" = 1'-0" 10

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LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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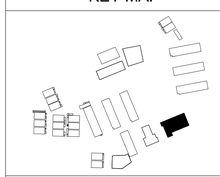
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



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MULTI-PURPOSE ROOM ALTERATION
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ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS

Date 10/19/2021	Project Number 21009
Scale As indicated	Drawing Number A7.1
Drawn / Checked	
Author / Checker	

PRINT DATE: 10/22/2021 4:47:43 PM
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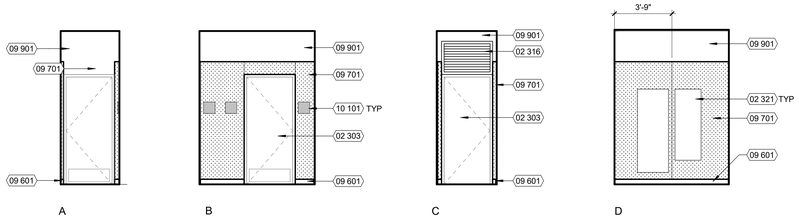
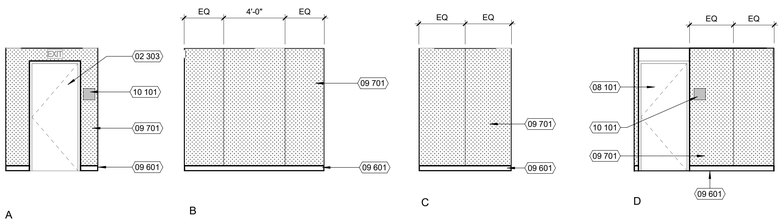
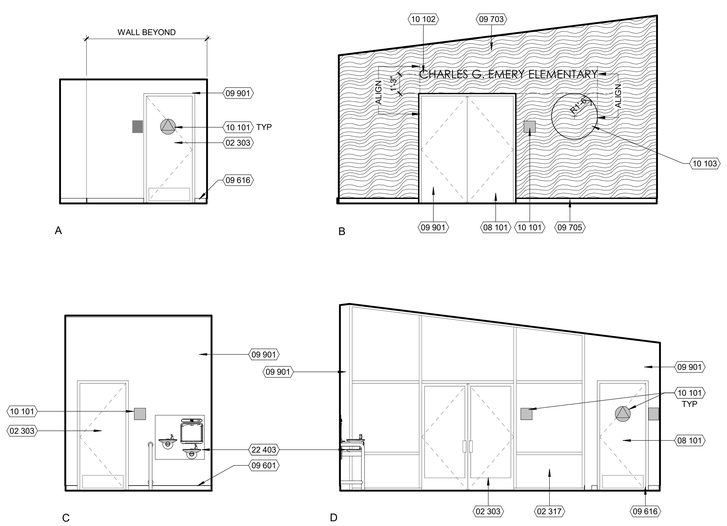


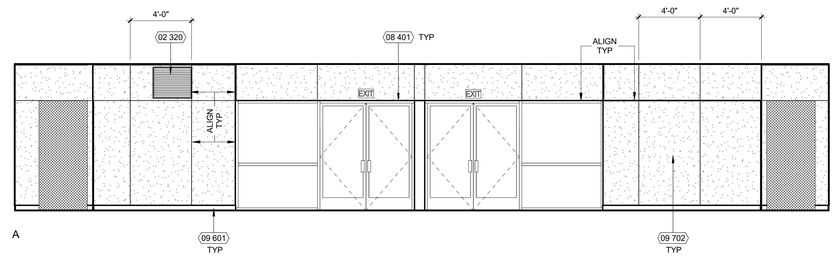
INTERIOR ELEVATIONS - HALL MP-13-DD 1/4" = 1'-0" 17

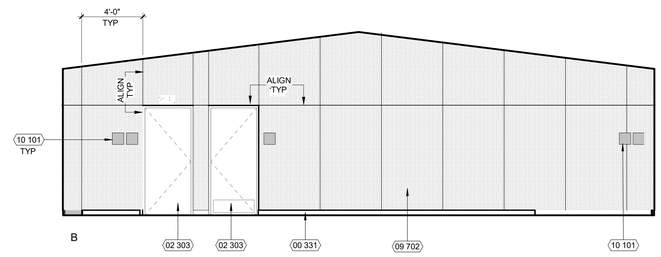


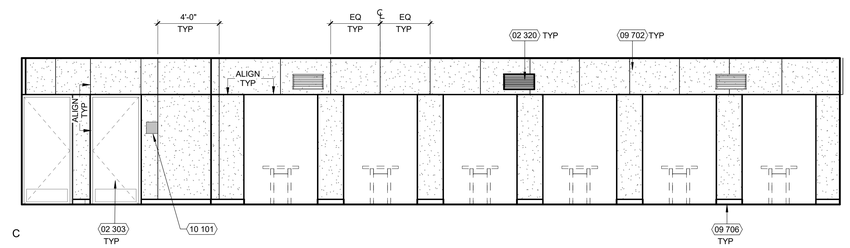
INT ELEV-HALL MP-5 1/4" = 1'-0" 18

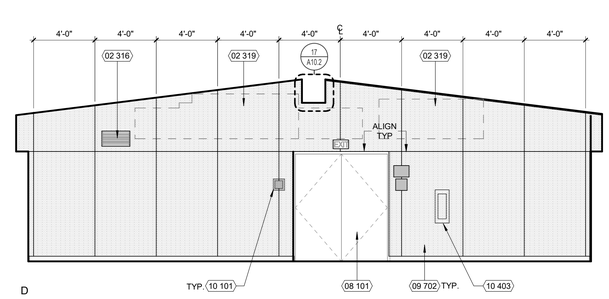


INTERIOR ELEVATIONS - FOYER MP-1 1/4" = 1'-0" 20









INTERIOR ELEVATIONS - MP-4 1/4" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
00 331	REMOVE FURRING
02 303	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 316	(E) LOUVER TO REMAIN, CLEAN AND PAINT P-1
02 317	(E) STOREFRONT TO REMAIN
02 319	(E) 6"x6" CERAMIC TILE STUDENT ART-REMOVE AND RETURN TO DISTRICT FOR FUTURE USE
02 320	(E) HVAC GRILLES, RELOCATE TO FACE OF FURRING; CLEAN AND PAINT P-1
02 321	(E) ELECTRICAL PANEL TO REMAIN, PROTECT IN PLACE
08 101	DOOR/FRAME PER DOOR SCHEDULE
08 401	STOREFRONT DOOR (SEE DOOR SCHEDULE)
09 601	4" RUBBER WALL BASE PER FINISH LIST
09 616	
09 701	8'-0" TALL FRP WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
09 702	TACKBOARD WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
09 703	STIKWOOD ADHERED WOOD PANELING PER FINISH LIST
09 705	4" SOLID WOOD BASE
09 706	WALL BASE PER FINISH LIST
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.5
10 102	6" TALL CAST ALUMINUM PIN MOUNTED LETTERS
10 103	POWDER COATED LASER CUT EMERY LOGO W/ CONCEALED FASTENERS
10 403	FIRE EXTINGUISHER (2A-10B:C) IN SEMI-RECESSED CABINET PER 24/A10.2
22 403	HI-LO DRINKING FOUNTAIN (SEE DETAIL 15/A10.2)

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	DATE
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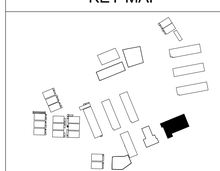
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



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MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

INTERIOR ELEVATIONS

Date	Project Number
10/19/2021	21009
Scale	Drawing Number
1/4" = 1'-0"	A8.1
Drawn / Author	Checked / Checker

PRINT DATE: 10/22/2021 4:47:48 PM
FILE PATH: C:\Users\glance\Documents\21009-Buena-Park\USD-Emery\MPR-A19_glance.rvt\SSV.rvt

DOOR SCHEDULE

MARK	DOOR SIZE PAIR	DOOR SIZE PANEL WIDTH	DOOR SIZE HT	DOOR SIZE THK	TYPE	MAT.	FINISH	CORE	GLASS	RATING	LOUVER HT	LOUVER WD	HDW GROUP	HDW PANIC	HDW CLOSER	FRAME TYPE	FRAME MTL	FRAME FINISH	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS THRESHOLD	COMMENTS
G-1A	PR	3'-6"	6'-0"	2"	-									YES	YES							FOR MORE INFORMATION, REFER TO DETAIL 13/A10.1
MP-1A	PR	3'-0"	7'-0"		A	(E)	(E)	(E)	-	-	-	-	(E)	YES	YES	(E)	(E)	(E)	(E)	(E)	(E)	
MP-1B	PR	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	YES	YES	(E)	(E)	(E)	(E)	(E)	(E)	
MP-2A	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	-	YES	(E)	(E)	(E)	(E)	(E)	(E)	REMOVE CLOSER DUE TO INSUFFICIENT PUSH SIDE DOOR CLEARANCE
MP-3A	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	-	YES	(E)	(E)	(E)	(E)	(E)	(E)	
MP-4A	PR	3'-0"	7'-0"		A	AL	FF	AL/GL	GL/T	-			1	YES	YES	AL	AL	FF	18/A9.1	9/A9.1	15/A9.1	
MP-4AA		3'-0"	7'-0"	1 3/4"	A	AL	FF	AL/GL	GL/T	-			5	YES	YES	AL	AL	FF	19/A9.1	14/A9.1	20/A9.1	ADD ALTERNATE: FOLDING GLASS PARTITION
MP-4B	PR	3'-0"	7'-0"		A	AL	FF	AL/GL	GL/T	-			1	YES	YES	AL	AL	FF	18/A9.1	9/A9.1	15/A9.1	
MP-4BA		3'-0"	7'-0"	1 3/4"	A	AL	FF	AL/GL	GL/T	-			5	YES	YES	AL	AL	FF	19/A9.1	14/A9.1	20/A9.1	ADD ALTERNATE: FOLDING GLASS PARTITION
MP-5A	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-		(E)	YES	YES	(E)	(E)	(E)	(E)	(E)	(E)	
MP-5B	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-			(E)	YES	YES	(E)	(E)	(E)	(E)	(E)	(E)	
MP-13A	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	YES	-	(E)	(E)	(E)	(E)	(E)	(E)	
MP-13B	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	YES	YES	(E)	(E)	(E)	(E)	(E)	(E)	

GENERAL NOTES

EXITING AND PATH OF TRAVEL

1. EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
2. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR BOTH INTERIOR AND EXTERIOR DOORS. REQUIRED FIRE DOORS: THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 POUNDS (66.7 N).
3. ALL REQUIRED EXIT DOORS SHALL BE OPERABLE FROM INSIDE WITHOUT THE USE OF ANY SPECIAL KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
4. ALL REQUIRED EXIT DOORS SHALL BE SIZED NOT LESS THAN 3'-0" WIDE AND 6'-8" HIGH AND BE CAPABLE OF OPENING 90 DEG. AND MOUNTED SO THAT THE CLEAR WIDTH OF THE EXIT WAY IS 32" MIN., U.O.N.
5. ALL REQUIRED EXIT DOORS SHALL SWING IN THE DIRECTION OF TRAVEL.
6. THE FLOOR OR LANDING LENGTH ON EACH SIDE OF AN EXIT DOOR SHALL BE LEVEL (<2% MAX. SLOPE) AND CLEAR AT LEAST 60 INCHES IN THE DIRECTION OF THE DOOR SWING (PULL SIDE) AND 48 INCHES ON THE PUSH SIDE, WHEN MEASURED AT RIGHT ANGLES FROM DOOR IN CLOSED POSITION. THE CLEAR WIDTH SHALL EXTEND 24 INCHES BEYOND THE STRIKE ON THE PULL SIDE OF ALL EXTERIOR EXIT DOORS AND 18 INCHES FOR INTERIOR EXIT DOORS. THE CLEAR WIDTH SHALL EXTEND 12 INCHES BEYOND THE STRIKE EDGE OF THE PUSH SIDE OF ALL EXIT DOORS. DOORS SHALL BE EQUIPPED WITH BOTH A LATCH AND CLOSER. SEE DETAIL 1 / A10.1
7. LATCHING AND LOCKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN THE PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVEL-TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATED BARS OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE.

HARDWARE

1. HAND ACTIVATED HARDWARE SHALL BE BETWEEN 34" AND 44" A.F.F. COORDINATE MOUNTING HEIGHT. DO NOT TO OBSTRUCT DOOR VISION LIGHT WHERE OCCURS.
2. PANIC HARDWARE SHALL BE PROVIDED ON EXIT DOORS SERVING AN OCCUPANT LOAD OF 50 OR MORE. PROVIDE WALL OR FLOOR MOUNTED DOOR STOPS FOR ALL DOORS. LOCATE FLOOR MOUNTED DOOR STOP WITHIN 4" MAX. OF WALL. PROVIDE BACKING AT ALL WALL MOUNTED DOOR STOPS.
3. PROVIDE NON-REMOVABLE PINS ON ALL HINGES ACCESSIBLE FROM THE EXTERIOR.
4. PROVIDE CYLINDER GUARDS ON ALL MORTISED OR RIM TYPE CYLINDER LOCKS WHICH PROJECT BEYOND THE FACE OF THE DOOR.
5. DOOR CLOSERS SHALL CONFORM WITH 2019 CBC 11B-404.2.8.1
6. DOORS TO INCLUDE FACTORY INSTALLED MAGNETIC CONTACTS, 3/8" RECESSED PRESS FIT, COLOR TO MATCH WINDOW FRAME, AT ALL CLASSROOM DOORS, SEE MECHANICAL

WINDOW GENERAL NOTES

1. FOR DOOR/WINDOW REFERENCE TAGS, SEE 10 / A2.1
2. ALL OVERALL DIMENSIONS CORRESPOND TO WINDOW ROUGH OPENINGS UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL BE SOLEY RESPONSIBLE TO COORDINATE ROUGH OPENING SIZE WITH REQUIRED SHIM SPACERS AND FINISH FRAME DIMENSION.
4. ALL ROUGH OPENING DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO WINDOW FABRICATION.
5. ALL WINDOWS SHALL BE RATED STC 35 MINIMUM.
6. SAFETY GLAZING IS REQUIRED WHEN BOTTOM OF EXPOSED EDGE OF GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE, PER "T" NOTED ON DOOR/WINDOW TYPES, THIS SHEET.
7. SAFETY GLAZING SHALL COMPLY WITH CBC SECTION 2406.
8. ANY WINDOW SECTION WHOSE NEAREST VERTICAL EDGE IS WITHIN 24" FROM A DOOR IN CLOSED POSITION AND WHOSE BOTTOM EDGE IS LESS THAN 60" ABOVE THE WALKING SURFACE SHALL BE TEMPERED AS INDICATED IN WINDOW TYPES, THIS SHEET. ALSO, ANY WINDOW SECTION WHERE THE LOWEST EDGE OF THE GLAZING MATERIAL IS LESS THAN 18" ABOVE THE FLOOR AND WHOSE TOP EDGE IS GRATER THAN 36" ABOVE THE FLOOR AND WHERE THE SECTION IS GREATER THAN 9 SF AND IS WITHIN 36" HORIZONTALLY OF A WALKING SURFACE SHALL BE TEMPERED.

DOOR/WINDOW ABBREVIATIONS

CORE:
GL GLASS

DOOR PANEL FINISH:
FF FACTORY FINISH

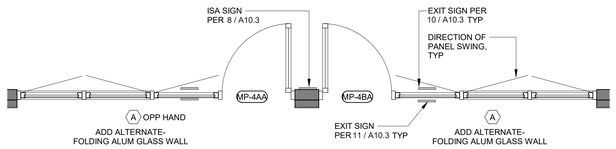
DOOR FRAME FINISH:
FF FACTORY FINISH
PTD PAINTED - SEE FINISH LIST

DOOR PANEL / FRAME MATERIAL:
AL ALUMINUM
HM HOLLOW METAL
PC POWDER COATED
STL STEEL

HARDWARE:
PH PANIC - SEE EXITING FLOOR PLAN

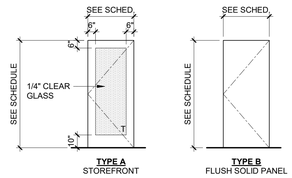
GLAZING TYPE PER SPEC 08 80 00:
SP (1) 1/4" THICK SINGLE GLAZING PANE
T TEMPERED, CATEGORY II (PER CBC 2019 SECTION 2406)

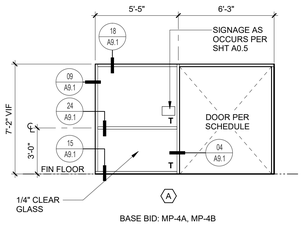
FRAME FINISH:
P PAINTED
PC POWDER COATED
FF FACTORY FINISH

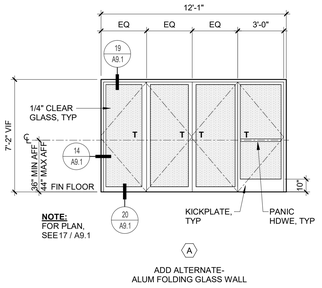


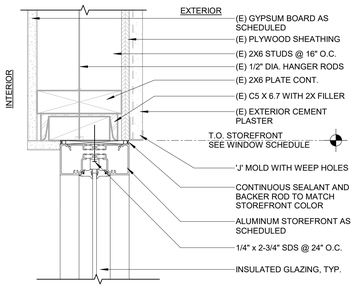
ADD ALTERNATE-FOLDING ALUM GLASS WALL FLOOR PLAN 3/8" = 1'-0" 17

DOOR TYPES





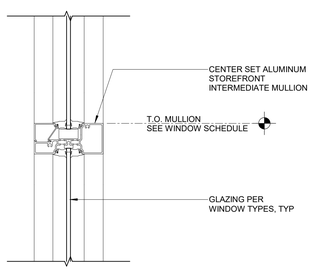




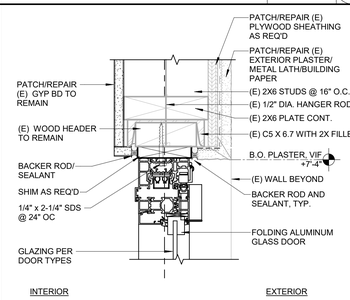
STOREFRONT HEAD @ PLASTER 3" = 1'-0" 18

FRAME TYPES

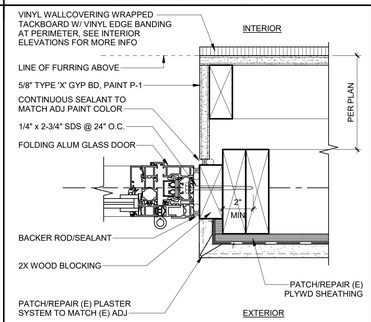
WINDOW TYPES



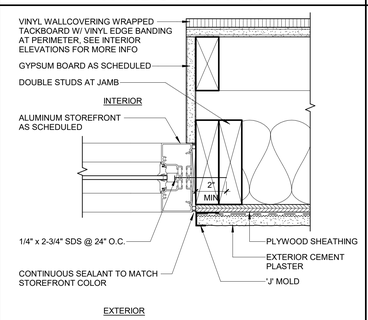
HORIZ. STOREFRONT MULLION 3" = 1'-0" 24



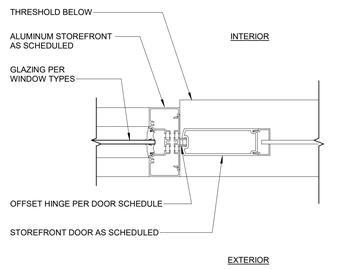
FOLDING ALUM GLASS WALL HEAD 3" = 1'-0" 19



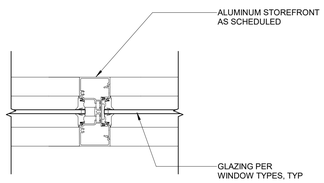
FOLDING ALUM GLASS WALL JAMB 3" = 1'-0" 14



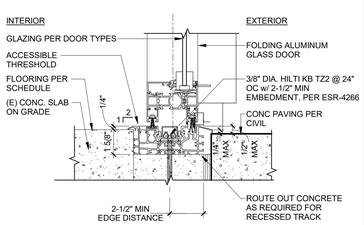
STOREFRONT JAMB 3" = 1'-0" 09



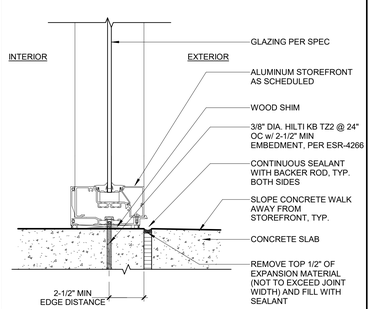
STOREFRONT DOOR JAMB 3" = 1'-0" 04



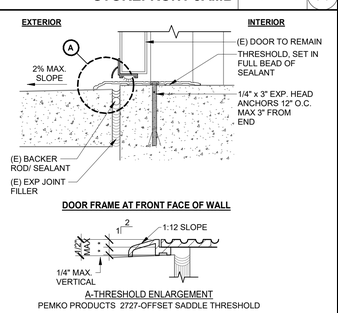
VERTICAL STOREFRONT MULLION 3" = 1'-0" 25



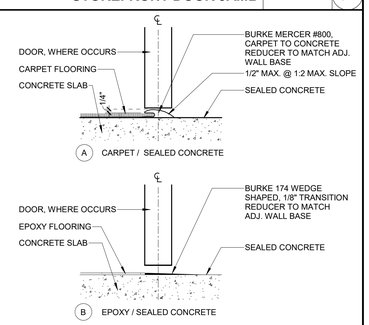
FOLDING ALUM GLASS WALL SILL 3" = 1'-0" 20



STOREFRONT SILL 3" = 1'-0" 15



EXTERIOR DOOR THRESHOLD 3" = 1'-0" 10



INTERIOR FLOOR TRANSITIONS 3" = 1'-0" 05

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120370 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

GENERAL NOTES

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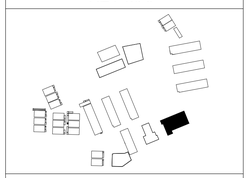
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

DOOR SCHEDULE AND DETAILS, WINDOW TYPES AND DETAILS

Date 10/19/2021	Project Number 21009
Scale As indicated	Drawing Number A9.1
Drawn / Checked	
Author / Checker	

PRINT DATE: 10/25/2021 3:10:10 PM
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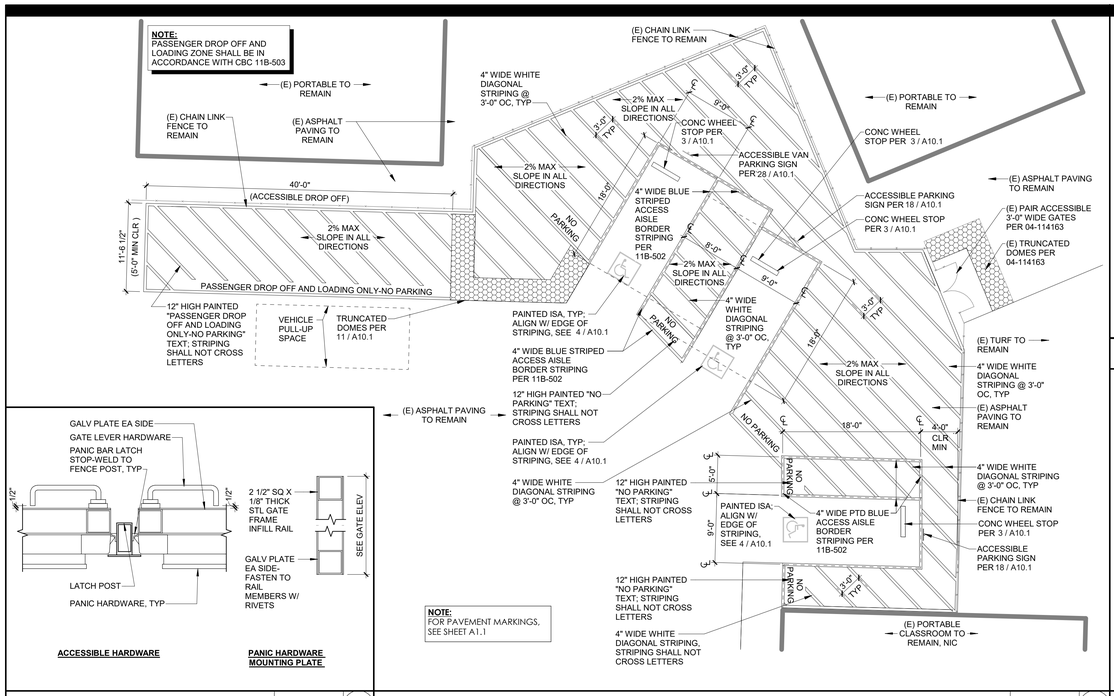
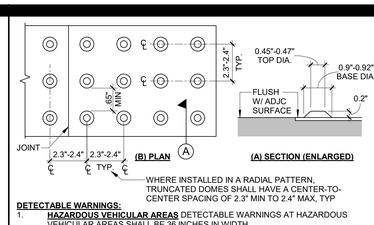


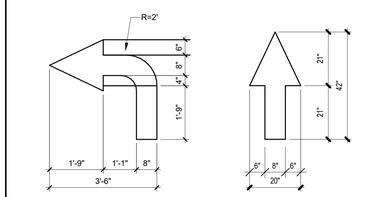
ADDED SCOPE-ENLARGED SITE PLAN 1/8" = 1'-0" 17



DETECTABLE WARNINGS:

1. **HAZARDOUS VEHICULAR AREAS** DETECTABLE WARNINGS AT HAZARDOUS VEHICULAR AREAS SHALL BE 36 INCHES IN WIDTH.
2. **ONLY APPROVED DSA-AC DETECTABLE WARNING PRODUCTS** AND DIRECTIONAL SURFACES SHALL BE INSTALLED PER THE CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 1, CH 5, ARTICLES 2,3, & 4. REFER TO CCR TITLE 24, PART 12, SEC 12 - 11B.705 FOR BLDG/FACILITY ACCESS SPEC'S FOR PRODUCT APPROVAL FOR DETECTABLE WARNING PRODUCTS/DIRECTIONAL SURFACES.
3. **COLOR AND CONTRAST** THE MAT'L USED TO PROVIDE VISUAL CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. WARNING SURFACES SHALL BE YELLOW AND APPROX. FS 33538 OF FEDERAL STD 595C OR SHALL PROVIDE A 70% MIN VISUAL CONTRAST W/ ADJ. WALKING SURFACES. (HAZARDOUS VEHICULAR AREAS SHALL ONLY ALLOW YELLOW, LISTED ABOVE)

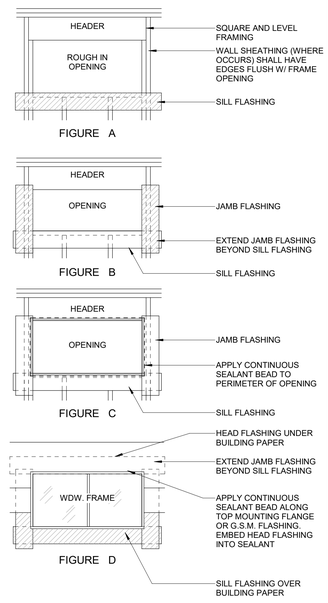
TRUNCATED DOMES 1/4" = 1'-0" 11



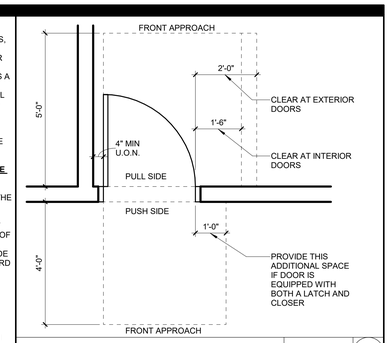
NOTES:
1. ALL FLOW ARROWS TO BE 2 COATS WHITE BEADED REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.
2. REVERSE ARROWS FOR OPPOSITEI DIRECTION OF FLOW

DIRECTIONAL ARROWS 1/2" = 1'-0" 12

1. INDIVIDUALLY FLASH ALL EXTERIOR OPENINGS FOR FIXTURES SUCH AS WINDOWS, DOORS, AND VENTS TO MAKE THEM WATER TIGHT. PENETRATION FLASHING MATERIAL SHALL BE BARRIER COATED REINFORCED AND SHALL PROVIDE 4 HOUR MIN. PROTECTION FROM WATER PENETRATION WHEN TESTED IN ACCORDANCE WITH ASTM D-779. SEALANT SHALL COMPLY TO FF T-S- 1657. IN HIGH WIND AREAS A WATERPROOF SHEET MEMBRANE SHALL BE USED OVER SOLID BACKING.
2. FOR NAIL-ON-FLANGE TYPE FIXTURES A STRIP OF APPROVED FLASHING MATERIAL SHALL BE AT LEAST 9" WIDE. FLASHING SHALL BE APPLIED IN A WEATHERBOARD FASHION AROUND THE FULL PERIMETER OF THE OPENING.
3. APPLY THE FIRST STRIP HORIZONTALLY IMMEDIATELY BELOW THE SILL, CUT IT SUFFICIENTLY LONG TO EXTEND PAST EACH SIDE OF THE WINDOW, SO THAT IT PROJECTS BEYOND THE VERTICAL FLASHING TO BE APPLIED LATER. FASTEN THE TOP EDGE OF THE SILL FLASHING TO THE FRAMING, BUT DO NOT FASTEN THE LOWER EDGE. SO THE WEATHER-RESISTIVE BARRIER APPLIED LATER MAY BE SLIPPED UP AND UNDERNEATH THE FLASHING IN WEATHERBOARD FASHION. (**SEE FIGURE A**)
4. NEXT, FASTEN STRIPS OF FLASHING AT EACH VERTICAL EDGE (JAMB) OF THE OPENING. RUN THIS FLASHING BEYOND THE SILL FLASHING AND ABOVE WHERE THE HEAD FLASHING WILL INTERSECT. (**SEE FIGURE B**)
5. APPLY A CONTINUOUS SEAL TO THE BACKSIDE (INTERIOR) OF THE MOUNTING FLANGE NEAR THE OUTER EDGE OR A CONTINUOUS SEAL TO THE PERIMETER OF THE OPENING AT A POINT TO ENSURE CONTACT WITH THE BACKSIDE (INTERIOR) OF THE MOUNTING FLANGE. (**SEE FIGURE C**)
6. FOR FIXTURES WITHOUT A NAIL-ON-FLANGE THE FLASHING SHALL BE 12" MIN. WIDE AND EXTEND INTO THE ROUGH FRAME AT THE SILL AND JAMB IN A WEATHERBOARD FASHION.
7. THE FIXTURE SHALL THEN BE INSTALLED.
8. NEXT, APPLY A CONTINUOUS SEAL AT THE TOP (HEAD) MOUNTING FLANGE OR G.S.M. HEAD FLASHING AND EMBED THE BOTTOM OF THE HEAD FLASHING OVER THE SEALANT AND THE MOUNTING FLANGE OR G.S.M. FLASHING. CUT THIS FLASHING SUFFICIENTLY LONG SO THAT IT WILL EXTEND BEYOND EACH JAMB FLASHING. FASTEN IN PLACE. (**SEE FIGURE D**)
9. APPLY REMAINING WEATHER-RESISTIVE BARRIER IN A WEATHERBOARD FASHION WITH THE SILL FLASHING LAPPING OVER THE TOP, AND THE HEAD AND JAMB FLASHING BELOW.
10. BASED UPON INDUSTRY STANDARDS APPROVED BY THE CALIFORNIA ASSOCIATION OF WINDOW MANUFACTURERS, (CAWM).

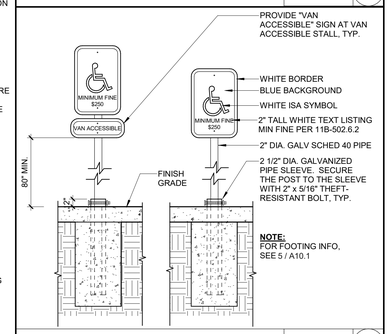


FLASHING AT EXT. WALL OPENINGS 1/4" = 1'-0" 8

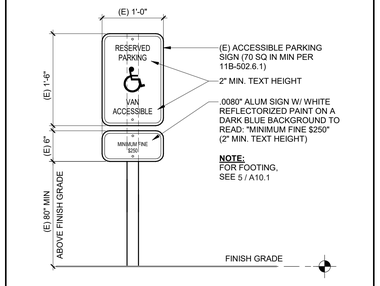


TYPICAL DOOR CLEARANCES 1/2" = 1'-0" 1

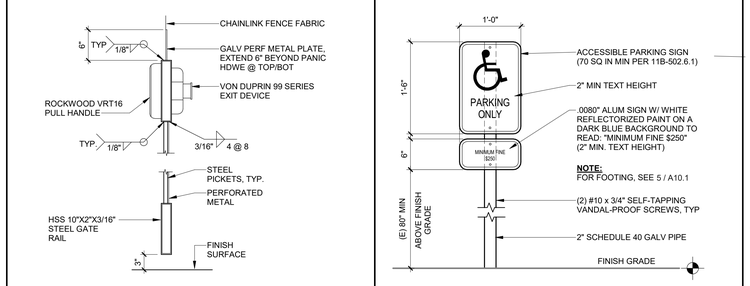
CHAIN LINK GATE HARDWARE 1" = 1'-0" 27



ACCESSIBLE STALL SIGNAGE 3/4" = 1'-0" 2

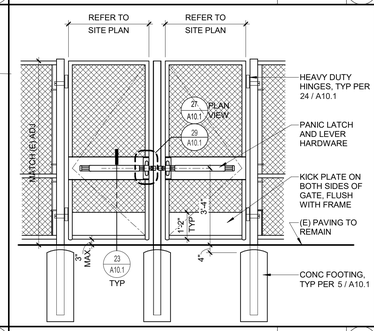


ACCESSIBLE VAN PARKING SIGN 1" = 1'-0" 28

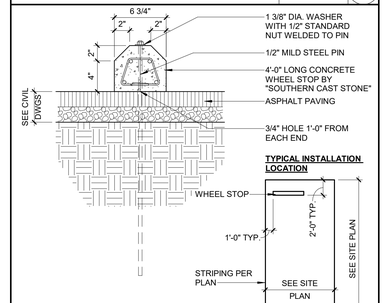


GATE PANIC HARDWARE SECTION 1" = 1'-0" 23

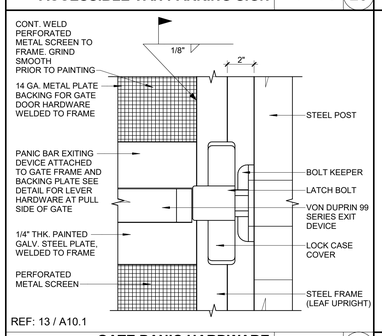
(E) ACCESSIBLE PARKING SIGN 1" = 1'-0" 18



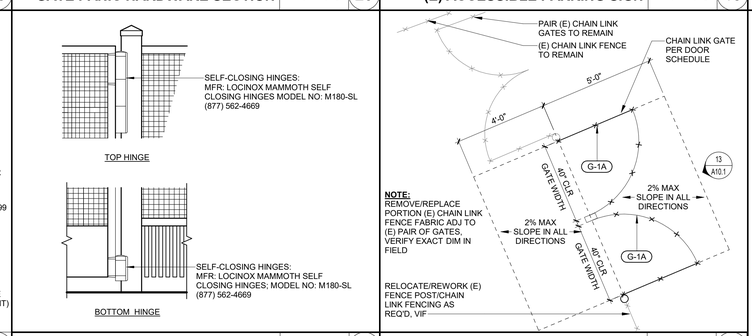
CHAINLINK GATE ELEVATION 3/8" = 1'-0" 13



WHEEL STOP 1 1/2" = 1'-0" 3

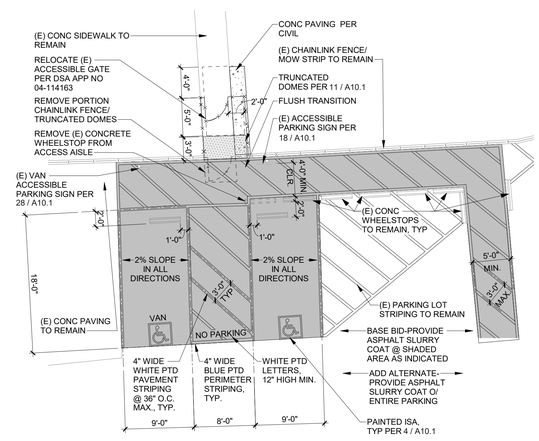


GATE PANIC HARDWARE ANCHORAGE 3/4" = 1'-0" 29

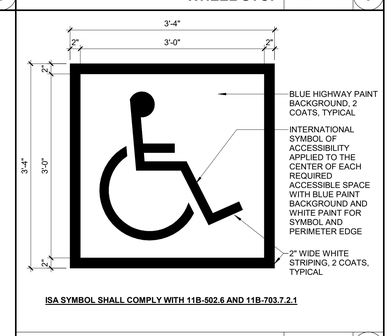


HEAVY DUTY HINGES 1" = 1'-0" 24

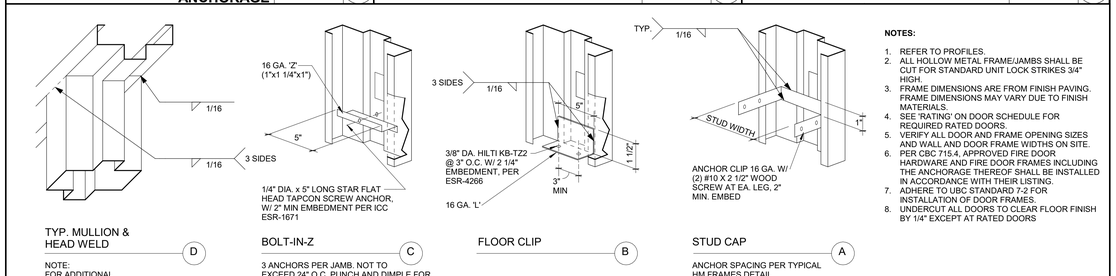
CHAIN LINK GATE PLAN 3/8" = 1'-0" 19



ENLARGED SITE PLAN-ACCESSIBLE PARKING 1/8" = 1'-0" 10



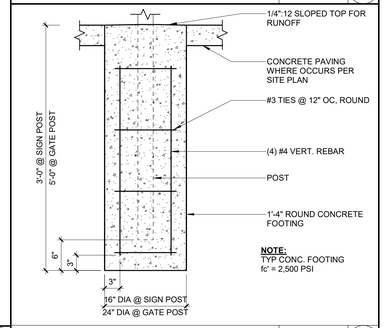
ACCESSIBLE PARKING STALL ISA 1" = 1'-0" 4



NOTES:

1. REFER TO PROFILES.
2. ALL HOLLOW METAL FRAME/JAMBS SHALL BE CUT FOR STANDARD UNIT LOCK STRIKES 3/4" HIGH.
3. FRAME DIMENSIONS ARE FROM FINISH PAVING. FRAME DIMENSIONS MAY VARY DUE TO FINISH MATERIALS.
4. SEE 'RATING' ON DOOR SCHEDULE FOR REQUIRED RATED DOORS.
5. VERIFY ALL DOOR AND FRAME OPENING SIZES AND WALL AND DOOR FRAME WIDTHS ON SITE.
6. PER CBC 715.4, APPROVED FIRE DOOR HARDWARE AND FIRE DOOR FRAMES INCLUDING THE ANCHORAGE THEREOF SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTING.
7. ADHERE TO UBC STANDARD 7-2 FOR INSTALLATION OF DOOR FRAMES.
8. UNDERCUT ALL DOORS TO CLEAR FLOOR FINISH BY 1/4" EXCEPT AT RATED DOORS

HM FRAME ANCHORAGE 12" = 1'-0" 20



POST FOOTING 1" = 1'-0" 5

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APP: 04-120370 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA — DATE SIGNED 10/15/2021	

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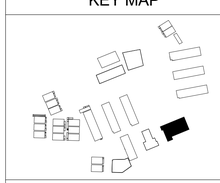
NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

EXTERIOR DETAILS

Date	Project Number
10/19/2021	21009
Scale	Drawing Number
As indicated	A10.1
Drawn / Checked	
Author / Checker	

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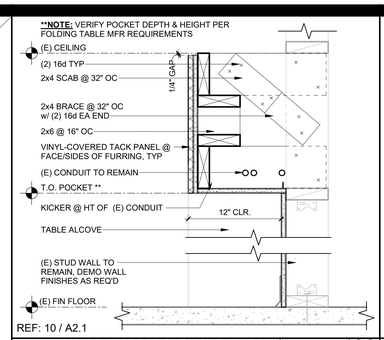
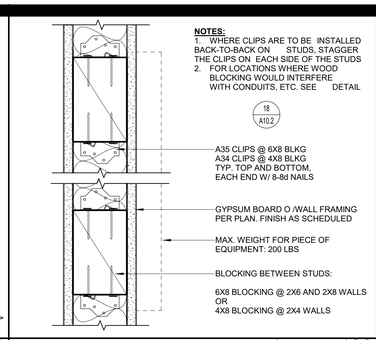


WALL FURRING @ MPR TABLE ALCOVE 1 1/2" = 1'-0" 21

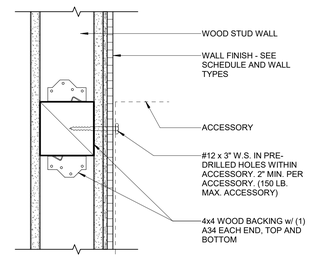


NOTES:
1. WHERE CLIPS ARE TO BE INSTALLED BACK-TO-BACK ON STUDS, STAGGER THE CLIPS ON EACH SIDE OF THE STUDS
2. FOR LOCATIONS WHERE WOOD BLOCKING WOULD INTERFERE WITH CONDUITS, ETC. SEE DETAIL

TYPICAL WALL BLOCKING 3" = 1'-0" 16

NOT USED

NOT USED



TYPICAL ACCESSORY MOUNTING 3" = 1'-0" 1

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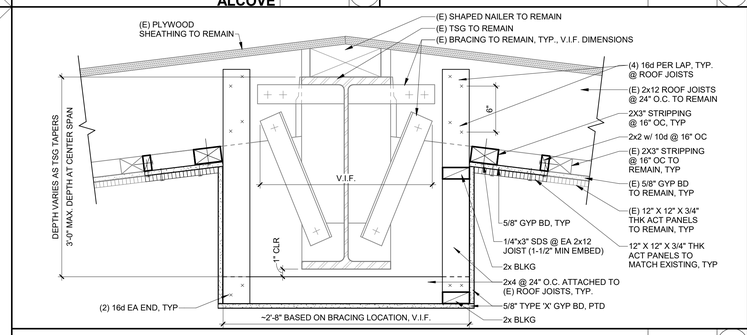
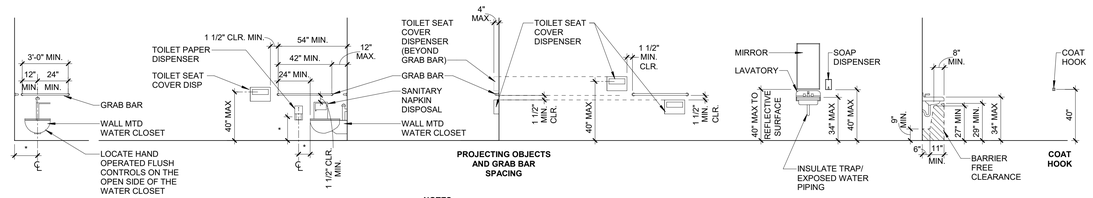
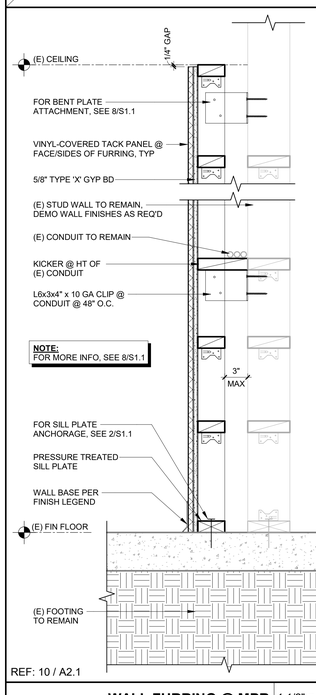


SOFFIT FRAMING 1 1/2" = 1'-0" 17

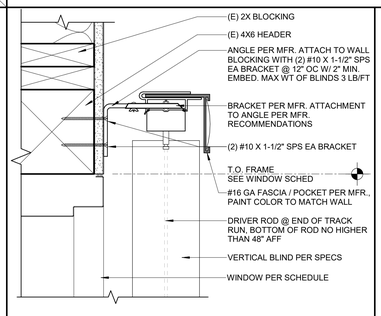


NOTES:
1. ALL DIMENSIONS MARKED *, SEE 3 / A10.2
2. SEE TOILET FIXTURE/ACCESSORY SCHEDULE FOR MORE INFO
3. FOR TYPICAL ACCESSORY MOUNTING SEE DETAIL 1 / A10.2

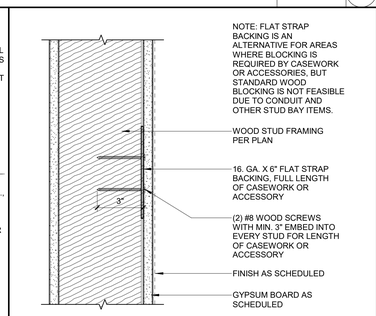
PLUMBING FIXTURE AND RESTROOM ACCESSORY MOUNTING HEIGHTS 1/4" = 1'-0" 2



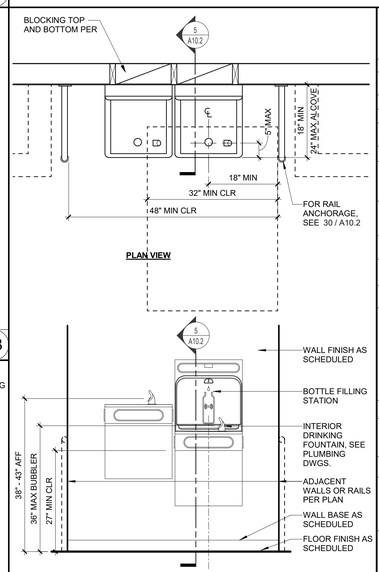
WALL FURRING @ MPR 1 1/2" = 1'-0" 29



VERTICAL BLIND ANCHORAGE 3" = 1'-0" 23



FLAT STRAP BACKING 3" = 1'-0" 18



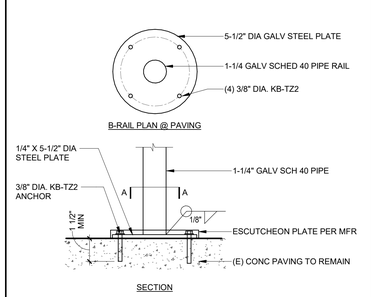
NOTES:
1. **A CLEAR FLOOR SPACE** POSITIONED FOR A FORWARD APPROACH SHALL BE PROVIDED. PROVIDE UNOBSTRUCTED KNEE/TOE SPACE UNDERNEATH OF NOT LESS THAN 27" IN HEIGHT (ADULT) AND 8" IN DEPTH, THE DEPTH MEASUREMENT TAKEN FROM THE FOUNTAIN'S FRONT EDGE. THE CLEAR SPACE SHALL BE CENTERED ON THE DRINKING FOUNTAIN.THERE SHALL BE TOE CLEARANCE OF 9" IN HEIGHT ABOVE THE FLOOR, AND 17" IN DEPTH FROM THE FRONT EDGE OF THE FOUNTAIN.
2. **OPERABLE PARTS** SHALL COMPLY WITH OPERABLE PARTS REQUIREMENTS. THE FLOW OF WATER SHALL BE ACTIVATED BY A MANUALLY OPERATED SYSTEM THAT IS FRONT MOUNTED OR SIDE MOUNTED AND LOCATED WITHIN 6 INCHES OF THE FRONT EDGE OF THE FOUNTAIN OR AN AUTOMATIC ELECTRONICALLY CONTROLLED DEVICE.
3. **SPOUT OUTLETS** OF WHEELCHAIR ACCESSIBLE DRINKING FOUNTAINS SHALL BE 36 INCHES MAXIMUM ABOVE THE FLOOR. SPOUT OUTLETS OF DRINKING FOUNTAINS FOR STANDING PERSONS SHALL BE 38 INCHES MINIMUM AND 43 INCHES MAXIMUM ABOVE THE FLOOR.
4. **THE SPOUT SHALL PROVIDE A FLOW OF WATER** 4 INCHES MINIMUM IN HEIGHT. THE ANGLE OF THE WATER STREAM FROM THE SPOUTS WITHIN 3 INCHES OF THE FRONT OF THE DRINKING FOUNTAIN SHALL BE 30 DEGREES MAXIMUM, AND FROM SPOUTS BETWEEN 3 INCHES AND 5 INCHES FROM THE FRONT OF THE DRINKING FOUNTAIN SHALL BE 15 DEGREES MAXIMUM, MEASURED HORIZONTALLY RELATIVE TO THE FRONT FACE OF THE DRINKING FOUNTAIN.
5. **DEPTH** WALL AND POST-MOUNTED CANTILEVERED DRINKING FOUNTAINS SHALL BE 18 INCHES MINIMUM AND 19 INCHES MAXIMUM IN DEPTH.
6. **PEDESTRIAN PROTECTION**. ALL DRINKING FOUNTAINS SHALL EITHER BE LOCATED COMPLETELY WITHIN ALCOVES, POSITIONED COMPLETELY BETWEEN WING WALLS, OR OTHERWISE POSITIONED SO AS NOT TO ENCROACH INTO PEDESTRIAN WAYS. THE PROTECTED AREA WITHIN WHICH A DRINKING FOUNTAIN IS LOCATED SHALL BE 32 INCHES WIDE MINIMUM AND 18 INCHES DEEP MINIMUM, AND SHALL COMPLY WITH MANEUVERING CLEARANCES FOR ALCOVES. WHEN USED, WING WALLS OR BARRIERS SHALL PROJECT HORIZONTALLY AT LEASE A FAR AS THE DRINKING FOUNTAIN AND TO WITHIN 6 INCHES VERTICALLY FORM THE FLOOR OR GROUND SURFACE.

ACCESSIBLE DRINKING FOUNTAIN 3/4" = 1'-0" 15

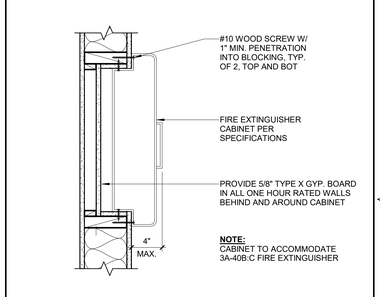
FIXTURE	DIMENSION REFERENCE	ADULT DIMENSION	PER TABLE 11B-604.9 (2019 CBC) SUGGESTED DIMENSIONS FOR CHILDREN		2019 CBC REFERENCES: T: TABLE S: SECTION F: FIGURE
			AGES 5-8	AGES 9-12	
GRAB BAR	TOP OF GRIPPING SURFACE	33" - 36"	20" - 25"	25" - 27"	T: 11B-604.9
TOILET PARTITION/ URINAL SCREEN	TOE CLEARANCE	9" MIN.	12" MIN.		
SOAP DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
ELECTRIC HAND DRYER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART	4" MAX PROJECTION FROM WALL, TYP		S: 11B-603.5
PAPER TOWEL DISPENSER/ WASTE RECEPTACLE	ABOVE FINISH FLOOR	40" MAX. TO TOP OF OPENING			S: 11B-603.5
SEAT COVER DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
MIRROR	BOTTOM EDGE OF REFLECTING SURFACE	40" MAX. ABOVE LAVATORY OR COUNTERTOP 35" MAX. NOT ABOVE LAVATORY OR COUNTERTOP			S: 11B-603.3
	BOTTOM EDGE OF REFLECTING SURFACE	20" MAX. IN DRESSING, FITTING, & LOCKER ROOMS			S: 11B-803.6
TOILET PAPER DISPENSER	OUTLET HEIGHT	19" MIN.	14" - 17"	17" - 19"	T: 11B-604.9 S: 11B-604.7
	FURTHEST IN FRONT OF WATER CLOSET	7" MIN. - 9" MAX. TO CENTERLINE OF DISPENSER			
SANITARY NAPKIN DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
SANITARY NAPKIN DISPOSAL	BETWEEN REAR WALL AND TOILET PAPER DISPENSER	19" MIN. A.F.F. TO BOTTOM OF OPENING	N/A		
COAT HOOK	ABOVE FINISH FLOOR - TOP OF HOOK	40" - 48"			S: 11B-604.8.3
HI-LO DRINKING FOUNTAIN	HIGH SPOUT HEIGHT	38" MIN. - 43" MAX.			S: 11B-602.7
	LOW SPOUT APPROACH, HEIGHT, AND LOCATION FROM FRONT EDGE OF THE UNIT INCLUDING BUMPERS	FRONT APPROACH PER 11B-306, 36" MAX. A.F.F., AND 5" MAX. FROM FRONT EDGE OF UNIT.	FRONT APPROACH PER 11B-306, 30" MAX. A.F.F., AND 3-1/2" MAX. FROM FRONT EDGE OF UNIT.		S:11B-602.2-EXC. S:11B-602.4 S:11B-602.5
	OPERABLE PARTS	6" MAX. FROM FRONT EDGE OF UNIT			S: 11B-602.3
	PROJECTION	18" - 19"			S: 11B-602.9
STANDARD WATER CLOSET					
ACCESSIBLE WATER CLOSET	CENTERLINE FROM WALL (TOILET OFFSET)	17" - 18" WHEEL CHAIR 17" - 19" AMBULATORY	12" - 15"	15" - 18"	T: 11B-604.9
	SEAT HEIGHT (TOP OF SEAT)	17" - 19"	12" - 15"	15" - 17"	T: 11B-604.9
STANDARD URINAL	RIM HEIGHT	24"			
ACCESSIBLE URINAL	RIM HEIGHT	17" MAX.			S: 11B-605.2
	PROJECTION	13 1/2" MIN.			S: 11B-605.2
	FLUSH CONTROL HEIGHT	44" MAX.			S: 11B-605.4
LAVATORY (W/ INSULATED SUPPLY AND DRAIN PIPES. NO ABRASIVE SURFACES OR SHARP EDGES ALLOWED.)	SINK RIM HEIGHT	34" MAX.	31" MAX.		S: 11B-606.2 S: 11B-606.3
	SINK KNEE CLEARANCE	27" MIN. KNEE CLEARANCE/ 29" APRON	24" MIN.		S: 11B-606.2 F: 11B-306.3

NOTES:
1. ALL FIXTURES AND ACCESSORIES ARE ACCESSIBLE UNLESS OTHERWISE NOTED OR DIMENSIONED.
2. SEE ENLARGED TOILET PLAN DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
3. ALL ACCESSORIES ARE TO BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 3'-4" FROM FLOOR TO CENTER OF FUNCTIONAL POINT.
4. ALL HEIGHT DIMENSIONS ARE A.F.F. (OR A.F.G. FOR EXTERIOR). ALL HORIZONTAL DIMENSIONS ARE TO FACE OF FINISH.
5. FOR TYPICAL ACCESSORY BACKING INFORMATION, SEE DETAIL 1 / A10.2

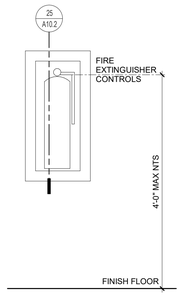
TOILET FIXTURE AND RESTROOM ACCESSORY SCHEDULE 1/2" = 1'-0" 3



DRINKING FOUNTAIN RAIL ANCHORAGE 3" = 1'-0" 30

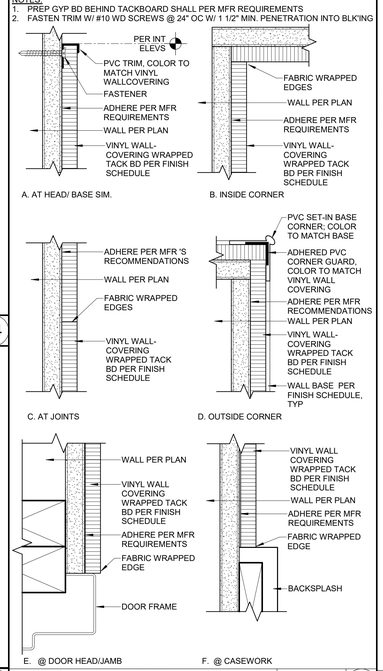


FIRE EXTINGUISHER CABINET ANCHORAGE 1 1/2" = 1'-0" 25



FIRE EXTINGUISHER CABINET MOUNTING 1" = 1'-0" 24

NOTES:
1. PREP GYP BD BEHIND TACKBOARD SHALL PER MFR REQUIREMENTS
2. FASTEN TRIM W/ #10 WD SCREWS @ 24" OC W/ 1 1/2" MIN. PENETRATION INTO BLK'ING



VINYL WALLCOVERING WRAPPED TACKBOARD ATTACHMENT 6" = 1'-0" 20

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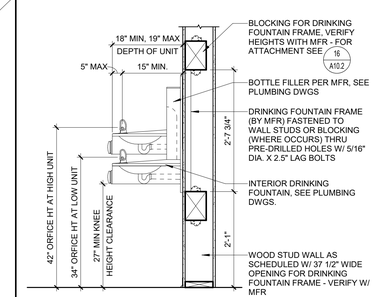

HI LO DRINKING FOUNTAIN SECTION AND CLEARANCES 3/4" = 1'-0" 5

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DATE: 11/01/2021

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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NO.	REMARKS	DATE

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	DATE
● DSA PLAN CHECK	08/16/2021
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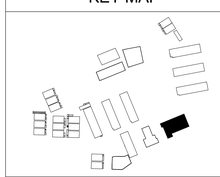
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

INTERIOR DETAILS

Date 10/19/2021	Project Number 21009
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Drawn / Checked	
Author / Checker	

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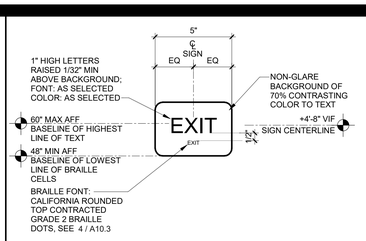
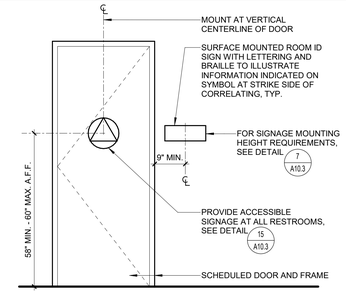


NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

EXIT SIGN "S3" 3" = 1'-0" (11)



SIGN MOUNTING ELEVATION 1/2" = 1'-0" (6)

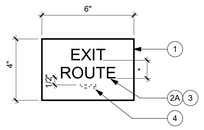
SIGNAGE GENERAL NOTES

1. FOR TYPICAL MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENTS, SEE 5 / A10.3
3. FOR SIGNAGE MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

SIGNAGE KEYNOTES

1. 1/4" THICK EXTRUDED CLEAR ACRYLIC SIGN WITH NON GLARE BACKGROUND OF 70% CONTRASTING COLOR TO TEXT AND ONE PIECE CONSTRUCTION PER SPEC BACKGROUND COLOR: TBD
2A. 1/32" RAISED TEXT, CENTER JUSTIFIED ON PLAQUE
TEXT STYLE: HELVETICA, ALL CAPS
TEXT HEIGHT: 3/4" U.O.N.
TEXT COLOR: TBD
2B. 1/32" RAISED TEXT, LEFT JUSTIFIED
STYLE: HELVETICA, ALL CAPS
TEXT HEIGHT: 3/4" U.O.N.
TEXT COLOR: TBD
3. VERIFY ROOM NAMES/NO'S PRIOR TO FABRICATION; 10 LETTERS PER LINE, MAX
4. CALIFORNIA ROUNDED TOP CONTRACTED GRADE 2 BRAILLE BELOW RAISED TEXT (11B-703.3.2). DISTANCE FROM BOTTOM OF RAISED LETTERS TO TOP OF BRAILLE CHARACTERS SHALL BE 3/8" MINIMUM AND 1/2" MAXIMUM. BRAILLE TO BE CENTER JUSTIFIED OR LEFT JUSTIFIED TO MATCH RAISED TEXT. FOR MORE INFORMATION ON BRAILLE REQUIREMENTS, SEE DETAIL 4 / A10.3
5. INTERNATIONAL SYMBOL OF ACCESSIBILITY PICTOGRAM; COLOR: TBD
6. NOT USED
7. RAISED IMAGE-COLOR: TBD
8. CONTRAST 70% WITH DOOR COLOR

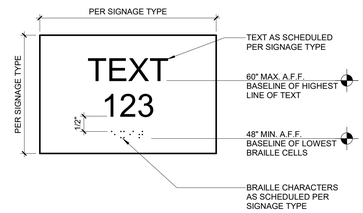
TYPICAL SIGNAGE NOTES 12" = 1'-0" (1)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. * FOR LINE SPACING REQUIREMENTS, SEE 4 / A10.3

EXIT ROUTE SIGN "S4" 3" = 1'-0" (12)



SIGNAGE MOUNTING HEIGHTS 6" = 1'-0" (7)

TABLE 11B-703.3.1
BRAILLE DIMENSIONS

MEASUREMENT RANGE	MINIMUM IN INCHES MAXIMUM IN INCHES
DOT BASE DIAMETER	0.059" (1.5MM) TO 0.063" (1.6MM)
DISTANCE BETWEEN TWO DOTS IN THE SAME CELL *	0.100" (2.5MM)
DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS *	0.300" (7.6MM)
DOT HEIGHT RANGE	0.025" (0.6MM) TO 0.037 (0.9MM)
DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW *	0.395" (10MM) TO 0.400" (10.2MM)
* MEASURED CENTER TO CENTER	

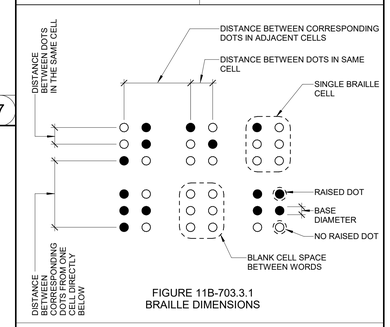
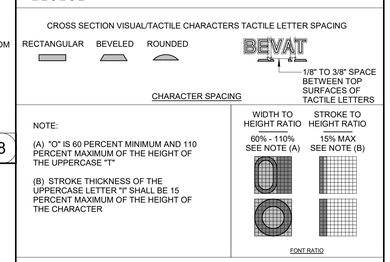


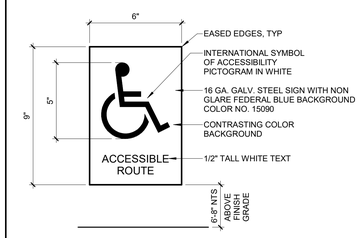
FIGURE 11B-703.3.1
BRAILLE DIMENSIONS



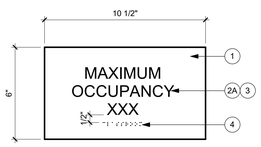
LINE SPACING PER 11B-703.2.8, TYPICAL

SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF RAISED CHARACTERS WITHIN A MESSAGE SHALL BE 135 PERCENT MINIMUM AND 170 PERCENT MAXIMUM OF THE RAISED CHARACTER HEIGHT.

SIGNAGE DESIGN REQUIREMENTS 1 1/2" = 1'-0" (4)



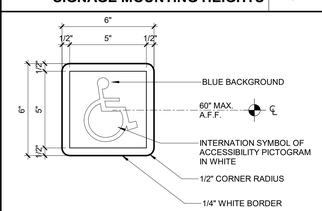
ACCESSIBLE ROUTE SIGN 3" = 1'-0" (18)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR LINE SPACING REQUIREMENTS, SEE 4 / A10.3

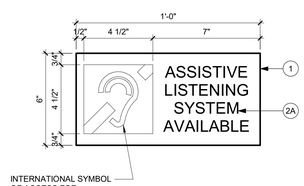
MAXIMUM OCCUPANCY SIGN "S5" 3" = 1'-0" (13)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3

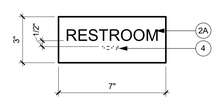
ACCESSIBLE ENTRY SIGN "S1" 3" = 1'-0" (8)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 5 A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 A10.3

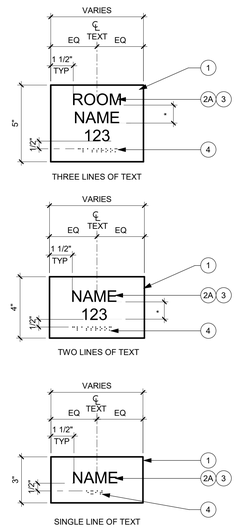
ALS SIGN "S8" 3" = 1'-0" (19)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

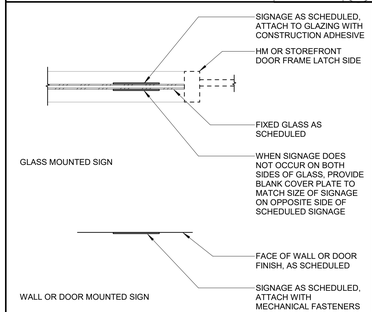
ALL GENDER RR WALL SIGN "S6" 3" = 1'-0" (14)



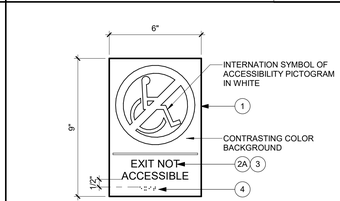
NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. * FOR LINE SPACING REQUIREMENTS, SEE 4 / A10.3

ROOM ID SIGN "S2" 3" = 1'-0" (10)



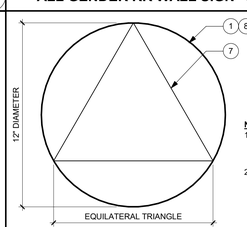
SIGNAGE MOUNTING TYPES 1" = 1'-0" (5)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

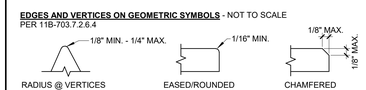
INACCESSIBLE EXIT SIGN "S9" 3" = 1'-0" (20)



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3

EDGES AND VERTICES ON GEOMETRIC SYMBOLS - NOT TO SCALE
PER 11B-703.7.2.6.4



ALL GENDER DOOR SIGN "S7" 3" = 1'-0" (15)

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120370 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

STUDIO W ARCHITECTS

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400 Spectrum Center Drive, Suite 1640
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

GENERAL NOTES

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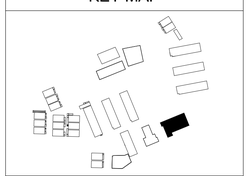
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

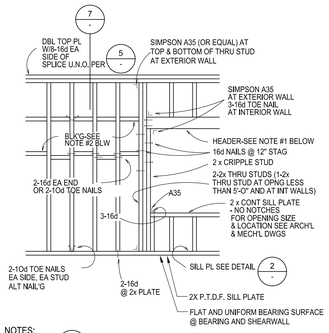
DSA BACKCHECK

EMERY ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8600 SOMERSET ST
BUENA PARK, CA 90621

SIGNAGE DETAILS

Date 10/19/2021	Project Number 21009
Scale As indicated	Drawing Number A10.3
Drawn / Checked	
Author / Checker	

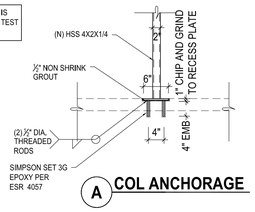
PRINT DATE: 10/22/2021 4:47:58 PM
FILE PATH: C:\Users\eyedri\Documents\21009-Buena-Park-USD-Emery-MPR-A19_eeyedri.rvt



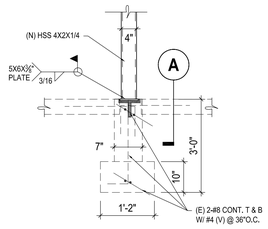
NOTES:
1. SEE DETAIL 6 FOR TYPICAL HEADER
2. BLOCKING REQ'D AT CEILING LINE & 8'-0" o.c. MAX SPACING. 2 x STUD WIDTH SOLID BLOCKING REQ'D. SEE SHEAR WALL DETAILS & SECTIONS FOR ADDITIONAL BLOCKING REQ'D.

(N) NON BRG WALL TO SLAB | 3/4" | 9

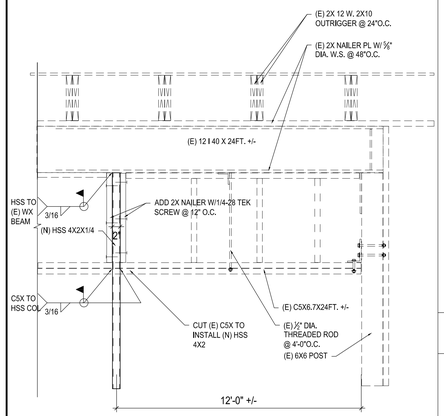
DSA SPECIAL INSPECTION IS REQUIRED, ANCHOR PULL TEST WILL NOT BE REQUIRED.



A COL ANCHORAGE



(N)COLUMN DOOR STIFFNER | 3/4" | 10



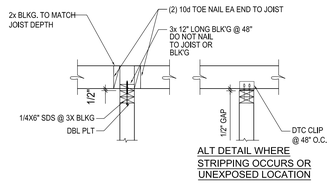
(N)COLUMN DOOR STIFFNER | 3/4" | 11

CLEAR OPNG WIDTH	HEADER SIZE	REMARKS
TO 4'-0"	4x6	
4'-1" TO 6'-0"	6x6	
6'-1" TO 8'-0"	6x8	
8'-1" TO 10'-0"	6x10	2-CRIPPLE STUDS U.N.O.
10'-1" TO 12'-0"	6x12	2-CRIPPLE STUDS U.N.O.

NOTE:

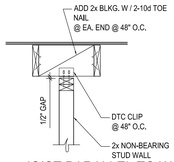
USE ABOVE SCHEDULED SIZES ONLY WHERE SIZE IS NOT INDICATED ON PLANS & DETAILS AND ONLY AFTER PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER & D.S.A. IF SPAN EXCEEDS 12'-0".

HEADER SCHEDULE | 3/4" | 6



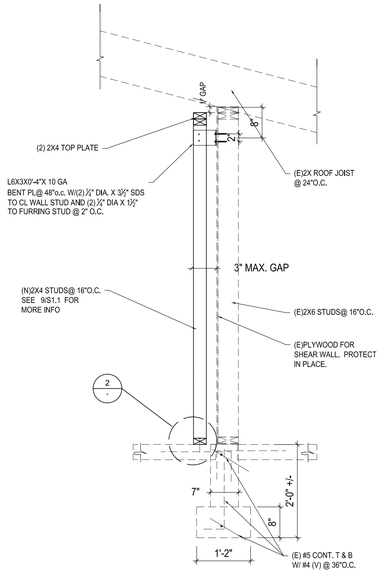
ALT DETAIL WHERE STRIPPING OCCURS OR UNEXPOSED LOCATION

JOIST NORMAL TO WALL

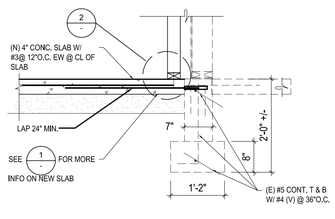


JOIST PARALLEL TO WALL

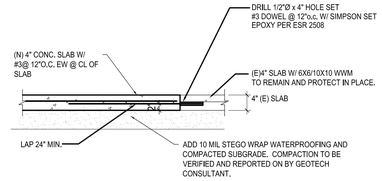
(N)NON BRG WALL SUPPORT | 3/4" | 7



(N) INTERIOR FURRING WALL | 3/4" | 8

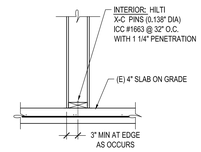


(N) SLAB@ EXT. WALL | 3/4" | 12



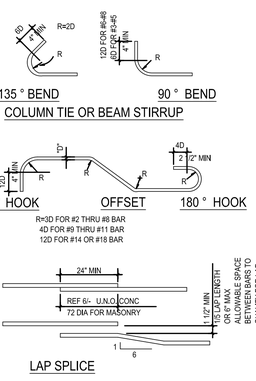
NO TENSION TESTING OF SLAB DOWELS IS REQ'D. AT INTERIOR SLAB REPLACEMENT AREAS AND TENSION TEST 50% OF DOWELS AT EXTERIOR WALL CONNECTION TO 1000 LBS TENSION.

NEW SLAB TO EXISTING SLAB | 3/4" | 1



NOTE:
PROVIDE WASHER AT ALL ANCHOR PINS.

(N) NON BRG WALL TO SLAB | 3/4" | 2



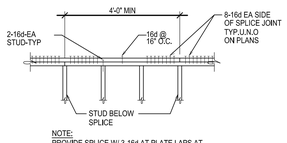
REINFORCING STEEL DETAILS | 3/4" | 3

JOIST OR RAFTER TO SIDE OF STUD:	
8" DEEP JOIST OR LESS	3 - 16d
EACH ADDITIONAL 4" OF DEPTH	1 - 16d
BRIDGING TO JOIST:	
TOE NAIL EACH END	2 - 8d
BLOCKING BETWEEN JOISTS OR RAFTERS:	
TOE NAIL EACH SIDE, EACH END	2 - 10d+
BLOCKING BETWEEN STUDS:	
TOENAIL	4 - 8d
OR END NAIL	2 - 16d
1"x6" SUBFLOOR OR LESS TO EACH JOIST, FACE NAIL	2 - 8d
WIDER THAN 1"x6" SUBFLOOR TO EA. JOIST, FACE NAIL	3 - 8d
2" SUBFLOOR TO JOIST OR GIRDER, BLIND & FACE NAIL	2 - 16d
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL	16d @ 16"
SOLE PLATE TO JOIST OR BLKG. @ BRACED WALL PANELS	16d @ 16"
TOP PLATE TO STUD, END NAIL	2 - 16d
STUD TO SOLE PLATE:	
TOENAIL	4 - 8d
OR END NAIL	2 - 16d
DOUBLE STUDS, FACE NAIL	16d @ 24"
DOUBLE TOP PLATES, FACE NAIL	16d @ 16"
DOUBLE TOP PLATES, LAP SPLICE	8 - 16d
BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE:	
TOENAIL	3 - 8d
RIM JOIST TO TOP PLATE:	
TOENAIL	8d @ 6"
TOP PLATES, LAPS & INTERSECTIONS, FACE NAIL	2 - 16d
CONTINUOUS HEADER, TWO PIECES - ALONG EA. EDGE	16d @ 16"
CEILING JOIST TO PLATE, TOENAIL	3 - 8d
CONTINUOUS HEADER TO STUD, TOENAIL	4 - 8d
CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL	3 - 16d
CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	3 - 16d
JOIST OR RAFTER AT ALL BEARINGS:	
TOE NAIL EACH SIDE	2 - 10d
1" BRACE TO EACH STUD & PLATE, FACE NAIL	2 - 8d
1"x8" SHEATHING OR LESS TO EA. BEARING, FACE NAIL	2 - 8d
WIDER THAN 1"x8" SHTG TO EA BEARING, FACE NAIL	3 - 8d
BUILT UP CORNER STUDS	16d @ 24"
BUILT UP GIRDER AND BEAMS:	
ALONG TOP AND BOTTOM OF BEAM OR JOIST	20d @ 32"
AT ENDS AND AT EACH SPLICE, STAGGER	2 - 20d
2" PLANKS, AT EA BEARING	2 - 16d

COMMON SHALL BE USED EXCEPT WHERE OTHERWISE STATED.

* WHEN POSSIBLE, NAILS DRIVEN PERPENDICULAR TO THE GRAIN SHALL BE USED INSTEAD OF TOE NAILS.

NAILING SCHEDULE | 3/4" | 4



NOTE:
PROVIDE SPLICE W/ 3-16d AT PLATE LAPS AT CORNERS & INTERSECTIONS.

TOP PLATE SPLICE | 3/4" | 5

WOOD

1. ALL WOOD MEMBERS SHALL BE DOUGLAS FIR LARCH #1 GRADE, EXCEPT BLOCKING MAY BE #2 GRADE, CONFORMING TO THE WCLIB GRADING RULES #16, OR AS SPECIFICALLY CALLED FOR ON THE DRAWINGS. EACH PIECE OF LUMBER SHALL BE GRADE MARKED. ALL MEMBERS TO HAVE MOISTURE CONTENT LESS THAN 19% AT TIME OF INSTALLATION.
2. ALL LUMBER WHICH COMES IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE DOUGLAS FIR NO. 2 OR BETTER, PRESSURE TREATED AND BEAR THE MARK INDICATING CONFORMANCE WITH THE REQUIREMENTS OF AWPA STANDARD U1 AND T1. THE LUMBER SHALL BE PRESSURE TREATED WITH THE CHEMICAL ACZA, BORATE OR EQUAL. WHERE SILLS ARE CUT, DRILLED OR NOTCHED THEY SHALL BE TREATED WITH A PRESERVATIVE THAT MEETS THE AWPA STANDARD U1 AND APPROVED BY THE ARCHITECT AND THE ENFORCEMENT AGENCY. ON ALL EXPOSED SURFACES FROM WHICH THE PRESERVATIVE TREATMENT HAS BEEN REMOVED. SILLS AT SHEAR WALLS AND BEARING WALLS SHALL BE FLAT AND UNIFORM ON CONCRETE SURFACE SO AS TO OBTAIN CONTINUOUS BEARING.
3. ALL PLYWOOD SHALL BE MANUFACTURED USING EXTERIOR GLUE AND SHALL CONFORM TO U.S. PRODUCT STANDARD PS-1, SECTION 7. PANELS SHALL CONFORM TO THE GRADES SPECIFIED ON THE DRAWINGS. PANELS EXPOSED TO WEATHER SHALL BE EXTERIOR GRADE. EACH PANEL SHALL BEAR MARKINGS IDENTIFYING THE QUALIFIED TESTING AND INSPECTION AGENCY, GRADE, NOMINAL THICKNESS, SPAN RATING, EXPOSURE DURABILITY CLASSIFICATION AND STANDARD TO WHICH IT IS CERTIFIED.
4. USE OF MACHINE NAILING IS SUBJECT TO A SATISFACTORY JOB SITE DEMONSTRATION FOR EACH PROJECT AND THE APPROVAL OF THE PROJECT ARCHITECT OR STRUCTURAL ENGINEER AND THE ENFORCEMENT AGENCY. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING IS NOT ALLOWED FOR 5/16 INCH PLYWOOD. IF THE NAIL HEADS PENETRATE THE OUTER PLY MORE THAN WOULD BE NORMAL FOR A HAND HELD HAMMER, OR IF MINIMUM ALLOWABLE EDGE DISTANCES ARE NOTE MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY AND MACHINE NAILING SHALL BE DISCONTINUED.
5. ALL BOLTED CONNECTIONS ARE TO BE RETIGHTENED PRIOR TO CLOSING IN.
6. NAILING SHALL BE WITH COMMON NAILS AND SHALL CONFORM TO THE CBC NAILING SCHEDULE TABLE 2304.10.1
7. SHEET METAL HANGERS, TIES, BRIDGING ANCHORS, ETC. SHALL BE BY THE SIMPSON COMPANY OR APPROVED EQUAL.
8. BLOCKING AND BRIDGING TO BE PROVIDED PER CBC 2308.4.6
9. FOR 10d NAILS AT PLYWOOD SHEAR WALLS AND ROOF DIAPHRAGMS, PROVIDE 1 1/2" MINIMUM PENETRATION INTO FRAMING PER AWS SDPWS (FORMERLY ANSI7AF & PA SDPWS) TABLES.

EXPANSION OR EPOXY - TYPE ANCHORS

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2019 CBC 1910A.5
2. INSTALLATION SHALL BE CONTINUOUSLY INSPECTED IN ACCORDANCE WITH ICC EVALUATION .
3. LOAD TEST FOR VALUES SHOWN U.N.O. ARE IN ACCORDANCE WITH CBC, SECTION 1910A.5.4
4. ALL EXPANSION BOLTS TO BE USED SHALL BE HILTI KB-TZ2 ANCHORS TYP PER ICC ESR-4266. ALL EPOXY BOLTS SHALL BE SIMPSON SET- 3G PER ICC ESR-4057. NO SUBSTITUTION SHALL BE MADE WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.

HILTI KB TZ BOLT TESTING TABLE. FOR EPOXY BOLTS SEE SPECIFIC DETAIL FOR EMBEDMENT AND DIRECT PULL TESTING LOAD.

BOLT DIA.	MINIMUM DEPTH OF EMBEDMENT	REQUIRED INSTALLATION TORQUE FOR EXPANSION BOLT
3/8"	2"	25 FT-LBS
1/2"	3 1/4"	40 FT- LBS
5/8"	4"	60 FT- LBS
3/4"	4 3/4"	110 FT- LBS

TABLE NOTES:

A. TABULATED VALUES ARE BASED ONTHE ICC ESR REPORT #4266 AND SHALL BE INSTALLED WITH SPECIAL INSPECTION. THE TABULATED VALUES ARE FOR ANCHORS INSTALLED A MINIMUM OF 12 DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 12 DIAMETERS. SEE CBC 1910A.5.5 FOR ACCEPTANCE AND FAILURE CRITERIA.

B. WHEN THE EXPANSION-TYPE ANCHORS ARE TO BE USED FOR SILL PLATE BOLTING APPLICATIONS, 10% OF THE ANCHORS SHALL BE TENSION TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR OTHER STRUCTURAL APPLICATIONS, ALL SUCH EXPANSION ANCHORS SHALL BE TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR NONSTRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE, 50% OR ALTERNATE BOLTS IN A GROUP SHALL BE TENSION TESTED.

C. THE TESTING OF THE EXPANSION AND EPOXY ANCHORS SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO DSA ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, DSA ENFORCEMENT AGENCY SHALL DETERMINE IF THE PROPOSED ADDITIONAL TESTING REQUIREMENTS ARE ACCEPTABLE.

POWDER DRIVEN SHOT PINS (LOW VELOCITY)

1. SHOT PINS MAY BE USED FOR SHEAR LOADS AND THEY MAY BE USED IN TENSION TO SUPPORT LOADS LESS THAN 90 POUNDS FOR MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT, ETC. ANY SHOT ANCHORS MUST HAVE ICBO APPROVAL FOR USE ON CONCRETE CURBS.
2. THE ALLOWABLE LOADS SHALL BE 90 POUNDS OR 80 % OF ESR APPROVED VALUES, WHICHEVER IS LESS. QUALIFICATIONS FOR USE OF ALL POWER ACTUATED TOOLS MUST MEET ANSI A10.3 STANDARD AS REQUIRED BY THE MANUFACTURER AND ALL OSHA REQUIREMENTS.
3. TESTING - THE OPERATOR, TOOL AND FASTENER SHALL BE PRE - QUALIFIED BY THE PROJECT INSPECTOR. THE INSPECTOR SHALL OBSERVE THE TESTING OF THE FIRST 1- FASTENER INSTALLATIONS. A TEST "PULL - OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS. IF ANY PIN FAILS TESTING, TEST ALL PINS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL (20) CONSECUTIVE PASS, THEN RESUME THE INITIAL TESTING FREQUENCY.
4. SHOT PINS SHALL BE HILTI. X - U (ESR 2269) AND CAN BE USED TO CONNECT METAL STUD TRACK OR WOOD SILL TO
   - CONCRETE — X - U 0.157 SHANK DIA. W/ 1-1/2" MIN.\ PENETRATION

GENERAL

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE 2019 CALIFORNIA BUILDING CODE AND ALL LOCAL CODES.
2. STRUCTURAL DRAWINGS ARE PARTS OF CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND COORDINATE WITH ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS, AND SHALL NOTIFY THE ARCHITECT AND ENGINEERS OF ANY DISCREPANCIES.
3. STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR SHALL PROVIDE MEANS AND METHODS AS REQUIRED. PROVIDE ADEQUATE BRACING, SHORING, TEMPORARY STRUCTURES AND PARTIALLY COMPLETED PORTIONS OF WORKS COMPLYING WITH NATIONAL, STATE AND ALL LOCAL SAFETY ORDINANCES.
4. TYPICAL DETAILS AND SCHEDULES MAY NOT BE REFERENCED ON DRAWINGS. CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH ALL TYPICAL DETAILS AND SCHEDULES PRIOR TO PROCEED WITH WORK.
5. CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM ALL DAMAGE.
6. THE CONTRACTOR SHALL NOT DEVIATE FROM THE TENDERED DOCUMENTS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND ENGINEERS.
7. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. FOR ALL LOCATIONS OF DATUM ELEVATION 0.0; REFER TO ARCHITECTURAL AND SITE DRAWINGS. ALL ELEVATIONS INDICATED ON THE STRUCTURAL DRAWINGS ARE MEASURED WITH RESPECT TO THIS DATUM, UNLESS NOTED OTHERWISE.

DESIGN LOADS

1. WIND DESIGN LOADS
   - BASIC WIND SPEED.....105 MPH
   - EXPOSURE..... C
   - INTERNAL PRESSURE COEFFICIENT..... ± 0.18
   - COMPONENT AND CLADDING..... -25 PSF (OUTWARD) +23 PSF (INWARD)
2. SEISMIC DESIGN LOADS
   - OCCUPANCY CATEGORY.....III
   - SITE CLASS.....D (DEFAULT)
   - SEISMIC DESIGN CATEGORY.....D
   - IMPORTANCE FACTOR.....1.0
   - S_s = 1.585 Fa=1.2
   - S_1 = 0.561 Fv=1.85
   - S_{DS} = 1.268
   - S_{D1} = 0.673 LATITUDE = 33.8852; LONGITUDE = -117.9842

BLDG	ANALYSIS PROCEDURE
ALL	STATIC

BLDG	DIRECTION	SEISMIC FORCE RESISTING SYSTEM	R	RHO	Cd	OMEGA	Cs
MPR	BOTH	LFWSW	6.5	1.0	4.0	2.5	0.243 (LRFD)

"LFWSW" - LIGHT FRAMED WOOD SHEAR WALL
3. ROOF LIVE LOAD = 16 PSF

REINFORCED CONCRETE (CAST-IN-PLACE)

1. STRUCTURAL CONCRETE AND CONCRETE PRACTICES SHALL CONFORM TO ACI 318 CURRENT EDITION AS WELL AS ALL APPLICABLE CODES STATED IN GENERAL NOTE.
2. ALL CONCRETE DETAILS SHALL BE IN ACCORDANCE WITH ACI-135 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", UNLESS NOTED OTHERWISE.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS. ALL CONCRETE NORMAL WEIGHT U.N.O.

	STRENGTH (PSI)	CEMENT TYPE	W/C	WT	MAX-AGG:
SLAB ON GRADE	3000	II	0.5	145	1"

4. ALL CONCRETE SHALL HAVE A MAXIMUM SLUMP NO GREATER THAN 4" EXCEPT FOR FOUNDATIONS WHICH MAY HAVE 5" MAX SLUMP.
5. MIX DESIGNS SHALL BE APPROVED BY STRUCTURAL ENGINEER PRIOR TO USE.
6. PROPOSED CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.

REINFORCING STEEL

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 40 FOR#3 AND SMALL AND GRADE 60 FOR #4 AND LARGER. REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706, GRADE 60. ALL REBAR AND ACCESSORIES SHALL BE PURPLE BONDED FUSION EPOXY (FBE) ASTM A934. ANY DAMAGE TO COATING SHALL BE REPAIRED IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.
2. WELDED WIRE FABRIC (WWF) SHALL COMPLY WITH ASTM 185, AND SHALL BE LAPPED 1-1/2 SPACES (12"MM).
3. ALL REINFORCING STEEL, DOWELS, ANCHOR BOLTS, ETC. SHALL BE WELL SECURED IN PLACE PRIOR TO PLACING CONCRETE.
4. ALL REINFORCING STEEL SHALL BE LAPPED AS SPECIFIED ON THE DETAIL. WHERE NOT SPECIFICALLY INDICATED ON THE DRAWING, ALL REINFORCING STEEL SHALL BE LAPPED USING THE TENSION SPLICE LENGTHS IN THE SCHEDULE ON DRAWING UNLESS NOTED OTHERWISE, TERMINATED CONTINUOUS BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.
5. DOWELS SHALL BE PROVIDED AT POUR AND CONSTRUCTION JOINTS AND SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCING SHOWN FOR THE SUBSEQUENT CONSTRUCTION.
6. REINFORCING STEEL SHALL HAVE THE FOLLOWING MINIMUM COVERS, U.N.O.

   - CONCRETE AGAINST EARTH (NOT FORMED) — 3"
   - CONCRETE AGAINST EARTH (FORMED AND TROWELED) — 2"
   - WALL AND CURB — 1-1/2"
   - SLAB ON GRADE — CENTER
7. WELDING OR REINFORCING STEEL SHALL COMPLY WITH AWS D1.4. ALL BARS TO BE WELDED SHALL CONFORM TO ASTM A706, GRADE 60.
8. SUBMIT REINFORCING STEEL SHOP DRAWING TO ARCHITECT FOR APPROVAL.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120370 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — exp. 6-30-22

DATE SIGNED: 10/19/2021

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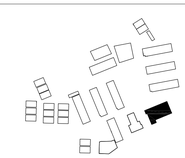
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



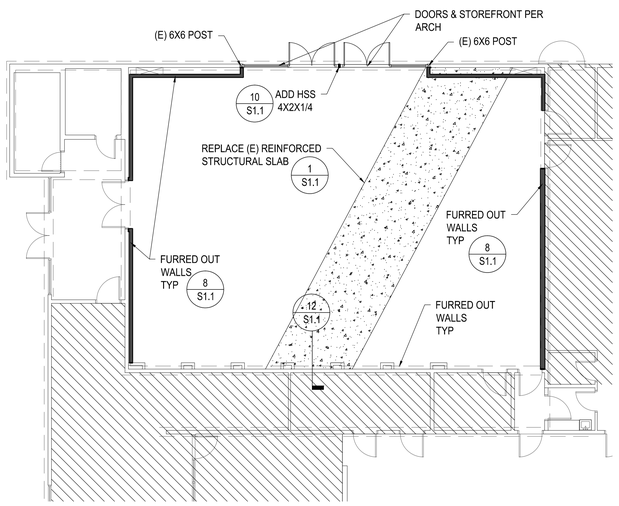
BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

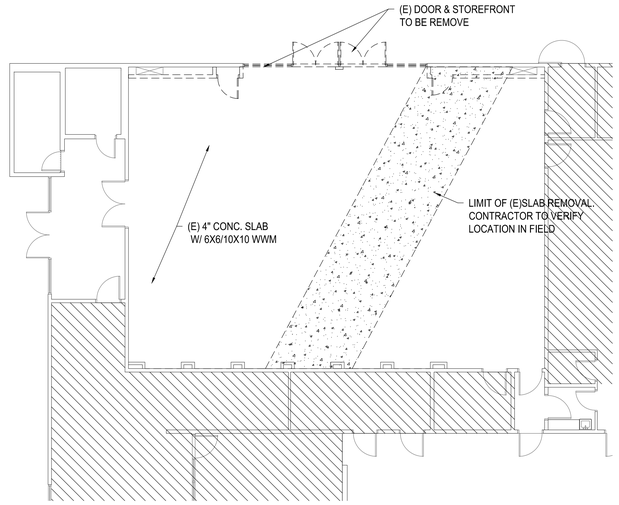
CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

GENERAL NOTES & STRUCTURAL DETAILS

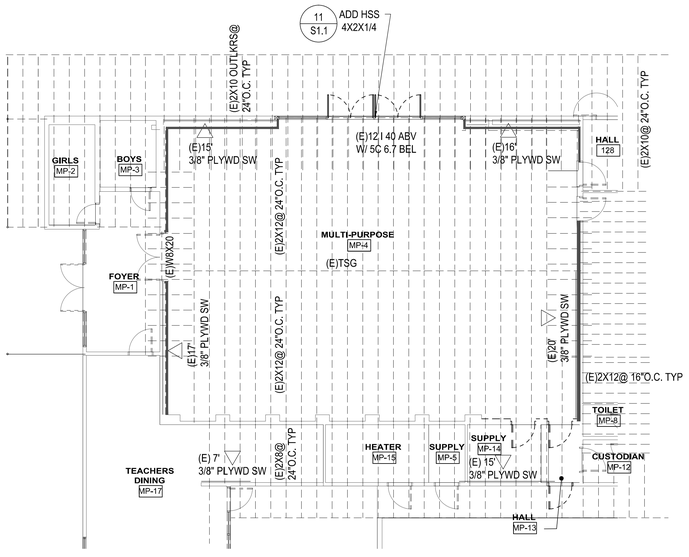
Date 10/19/2021	Project Number 21009
Scale AS NOTED	Drawing Number S1.1
Drawn / Checked	
Author / Checker	



FOUNDATION PLAN | 1/8" = 1'-0" | 3



DEMO FLOOR PLAN | 1/8" = 1'-0" | 1



ROOF FRAMING PLAN | 1/8" = 1'-0" | 3

KEYNOTES

NUMBER	NOTE

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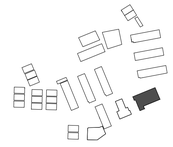

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STRUCTURAL PLANS

Date 10/19/2021	Project Number 21009
Scale AS NOTED	Drawing Number S2.1
Drawn Author	Checked Checker

FIXTURE SCHEDULE

ITEM	FIXTURE	ROUGH-IN CONNECTIONS: TRAP	WASTE	VENT	HOT WATER	COLD WATER	GAS	DESCRIPTION
WC 1	WATER CLOSET (ACCESSIBLE)	INT	4"	2"	--	1"	--	AMERICAN STANDARD (A/S) NO. 3461.001 "MADERA FLOWISE 16-1/2" HEIGHT ELONGATED FLUSHOMETER TOILET", SIPHON JET, FLOOR MOUNTED, ELONGATED BOWL, 16-1/2" HIGH. COMPLETE WITH SLOAN ROYAL NO. 111-1.28 GPF FLUSH VALVE, OLSONITE NO. 95SSCT SEAT AND A/S BOLT CAPS.
L 1	LAVATORY (ACCESSIBLE, CW ONLY)	1-1/4"	2"	1-1/2"	--	1/2"	--	AMERICAN STANDARD (A/S) NO. 0355.012 "LUCERNE WALL HUNG LAVATORY", 20" X 18", WALL HUNG. COMPLETE WITH CHICAGO NO. 3400-E39VPABCP METER FAUCET 0.35 GPM NON-AERATING SPRAY, McGUIRE NO. 155A 1-1/4" OUTLET "OPEN GRID P.O. PLUG", McGUIRE NO. PW8090NCO 1-1/4" L.A. PATTERN P-TRAP WITH TRAP AND SUPPLY COVERS, GALVANIZED NIPPLE AND CHROMIUM PLATED BRASS CASING, CHICAGO NO. 1017-ABCP LOOSE KEY STOP WITH RIGID SUPPLY, AND ZURN NO. Z-1231-EZR-WL ADJUSTABLE CONCEALED ARM CARRIER W/ SLEEVE FOR WASTE. MOUNT IN ACCORDANCE WITH ADA REQUIREMENTS.

ITEM	FIXTURE	ROUGH-IN CONNECTIONS: TRAP	WASTE	VENT	HOT WATER	COLD WATER	GAS	DESCRIPTION
EWC 1	ELECTRIC WATER COOLER W/BOTTLE FILLER (ACCESSIBLE)	1-1/2"	2"	1-1/2"	--	3/4"	--	ELKAY NO. LZSTL8WSLK, DUAL HEIGHT, SURFACE WALL MOUNTED, LIGHT GRAY GRANITE, BARRIER FREE, 8 GPH OF 50° F. WATER WITH 80° F. INLET WATER AT 90° F. AMBIENT, 1/5 HP, 115 VOLT, 1 PHASE. COMPLETE WITH CHICAGO NO. 45LKABCP ANGLE STOP WITH 1/2" FEMALE INLET & OUTLET. MOUNT AT ADA ACCESSIBLE HEIGHT.
WHA 1	WATER HAMMER ARRESTOR	--	--	--	--	--	--	ZURN NO. Z-1700 SERIES "SHOKTROL" WATER HAMMER ARRESTOR COMPLETE BEHIND ACCESS PANEL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. ALL ACCESSIBLE WATER CLOSETS SHALL HAVE FLUSH VALVE WITH HANDLE ON OPEN SIDE.
3. ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON DRAWINGS.
4. ALL PLUMBING FIXTURE VENTS TO TERMINATE A MINIMUM OF 12 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM ANY OUTSIDE AIR INTAKES.
5. EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS.
6. CONNECTION BETWEEN INCOMPATIBLE MATERIALS ABOVE GRADE AND INSIDE BUILDING SHALL BE MADE WITH TWO (2) DIELECTRIC UNIONS SEPARATED BY A TWELVE INCH (12") SECTION OF RED BRASS PIPE.
7. ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. ALL URNINALS SHALL HAVE CLEANOUTS ABOVE FIXTURE, CPC 707.4. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
8. SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBLE FIXTURE LOCATIONS AND MOUNTING HEIGHTS. INSULATE ALL EXPOSED HOT WATER AND DRAIN PIPING BELOW ACCESSIBLE LAVATORIES AND SINKS.
9. ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING.
10. ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA PLUMBING CODE 2019.
11. THESE DRAWINGS INDICATE THE SEWER, WATER, AND STORM DRAIN SYSTEMS TO POINT OF CONNECTION 5'-0" OUTSIDE OF THE BUILDING. CONTINUATION OF THESE SYSTEMS IS SHOWN ON THE CIVIL DRAWINGS AND IS SPECIFIED UNDER ANOTHER SECTION OF THE SPECIFICATIONS. THE PIPING SHALL BE INSTALLED TO MEET THE INVERT ELEVATIONS SHOWN ON THE CIVIL DRAWINGS.
12. INSULATION (SEE SPECIFICATION FOR TYPE REQUIRED) AND COVERING ON PIPE AND TUBING SHALL HAVE A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DENSITY NOT TO EXCEED 450 WHEN TESTED IN ACCORDANCE WITH 2019 C.B.C. SECTION 720.3.
13. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHERE TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. CMC 2019, CHAPTERS 7, 9 ,& 11.
14. ANY ALTERATIONS TO A STRUCTURAL MEMBER, SUCH AS CUTTING, BORING, BRAZING, DRILLING, WELDING, ETC. SHALL HAVE PRIOR WRITTEN APPROVAL OF ARCHITECT, STRUCTURAL ENGINEER AND DSA.
15. M.E.P. COMPONENT ANCHORAGE NOTE:

    ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

    1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
    2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRE) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
    3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVER BY DSA.

15. CONT.

    THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REVERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENTS IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

    A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
    B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL

    THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE THE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE THE DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

16. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCE AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3, AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC SECTIONS 1617A.1.24, 1617A.1.25, AND 1616A.1.26.

    THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. OSHPD OPM FOR 2019 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

    MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

    MP [ ] MD [ ] PP [ ] E [ ] – OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

    MP [ ] MD [ ] PP [X] E [ ] – OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #0043-13.

    –

LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	S OR W	SOIL OR WASTE ABOVE FLOOR
	S OR W	SOIL OR WASTE BELOW FLOOR OR GRADE
	V	SANITARY VENT
	CW	COLD WATER
		DIRECTION OF FLOW
	SOV	SHUT-OFF VALVE
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
		RISER UP
		RISER DOWN
	ABV	ABOVE
	AP	ACCESS PANEL
	BEL	BELOW
	CLG	CEILING
	CONT	CONTINUATION
	COTG	CLEANOUT TO GRADE
	DN	DOWN
	EXIST	EXISTING
	FLR	FLOOR
	POC	POINT OF CONNECTION
	PLCS	PLACES

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PDS
PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW M. GOODRAY No. M35836 Exp. 3/31/22 MECHANICAL STATE OF CALIFORNIA

DATE SIGNED: 10/15/2021

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
◯ DSA PLAN CHECK	
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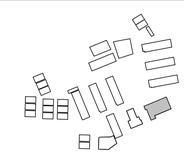
◯ BIDDING	
◯ CONSTRUCTION	

KEY PLAN



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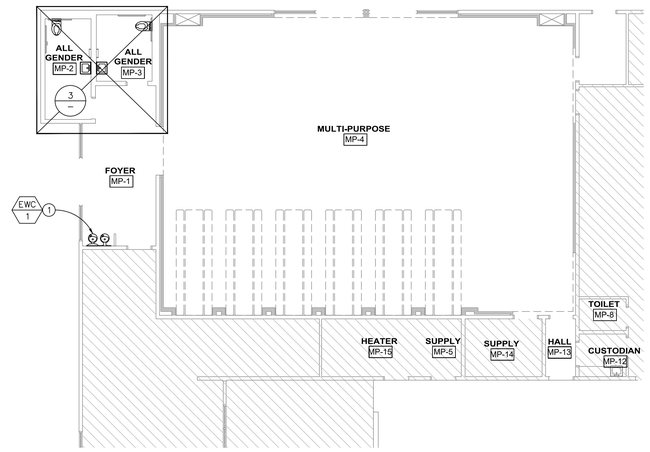
PLUMBING
LEGEND,
SCHEDULE, AND
GENERAL NOTES

Date 10/19/2021	Project Number 21009
Scale NONE	Drawing Number
Drawn NH / Checked TP	P0.1



CONSTRUCTION NOTES:

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2. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.
3. WHERE PLANS INDICATE NEW FIXTURES OR EQUIPMENT CONNECTING TO EXISTING SERVICES, PLUMBING CONTRACTOR SHALL MODIFY AND/OR EXTEND EXISTING PIPING OR ROUGH-INS AS REQUIRED TO SUIT THE NEW FIXTURE.

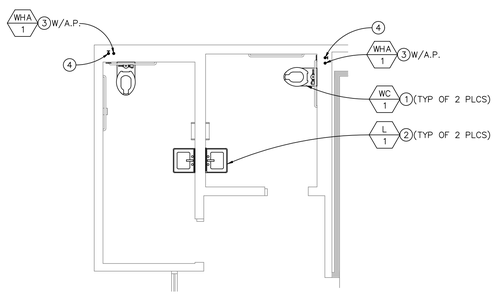
CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW ELECTRIC WATER COOLER.

NORTH

PLUMBING FLOOR PLAN

SCALE 1/8"=1'-0" | 2

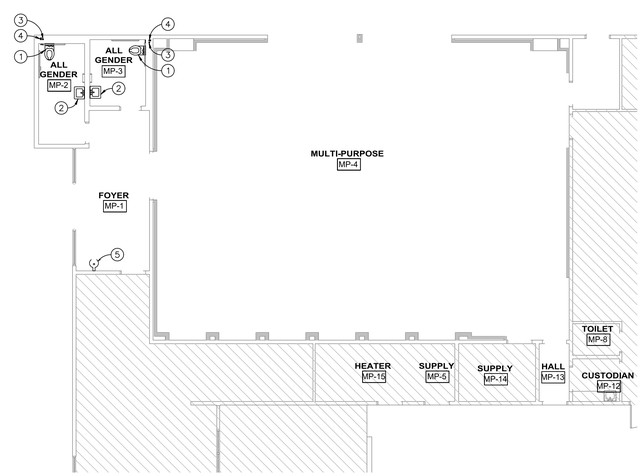


CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER CLOSET.
2. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW LAVATORY.
3. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER HAMMER ARRESTOR WITH SHUT-OFF VALVE & ACCESS PANEL.
4. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW SHUT-OFF VALVE & ACCESS PANEL.

PLUMBING ENLARGED FLOOR PLAN

SCALE 1/4"=1'-0" | 3



DEMOLITION NOTES:

1. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL ITEMS INDICATED TO BE REMOVED. CONTRACTOR SHALL VERIFY ALL SUCH ITEMS WITH OWNER PRIOR TO REMOVAL. ALL ITEMS NOT REFUSED BY OWNER SHALL BE REMOVED INTACT AND FULLY FUNCTIONAL BY CONTRACTOR FOR OWNER'S USE. ALL ITEMS REFUSED BY OWNER SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.
2. REMOVE EXISTING FIXTURES AND EQUIPMENT AS INDICATED. HOT WATER, COLD WATER, VENT AND/OR GAS PIPING SERVING SUCH ITEMS SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION WITHIN WALL OR ABOVE CEILING AND CAPPED OR PLUGGED UNLESS OTHERWISE NOTED (U.O.N.). WASTE PIPING SERVING SUCH FIXTURES SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION BELOW FINISHED FLOOR OR BEHIND WALL AND CAPPED OR PLUGGED U.O.N. ASSOCIATED EXISTING DEFUNCT PIPING IN CONCEALED LOCATIONS ABOVE CEILING, WITHIN WALLS, BELOW SLAB, OR BELOW GRADE SHALL BE ABANDONED IN PLACE OR REMOVED AS NECESSARY TO AVOID INTERFERENCE WITH NEW WORK. ASSOCIATED EXISTING DEFUNCT PIPING AND COMPONENTS IN EXPOSED LOCATIONS SHALL BE REMOVED U.O.N. (INCLUDING FLOOR DRAINS, WALL AND FLOOR CLEANOUTS, CLEANOUTS TO GRADE, ACCESS PANELS, SHUT-OFF VALVES AND COCKS, YARD BOXES, MANHOLES, CATCH BASINS, AND OTHER EXPOSED COMPONENTS). EXISTING DEFUNCT ELECTRICAL COMPONENTS SERVING EXISTING TO BE REMOVED EQUIPMENT SHALL BE DEMOLISHED AND REMOVED TO POINT OF ORIGIN.

DEMOLITION KEY NOTES:

1. EXISTING WATER CLOSET TO BE REMOVED BY PLUMBING CONTRACTOR.
2. EXISTING LAVATORY TO BE REMOVED BY PLUMBING CONTRACTOR.
3. EXISTING WATER HAMMER ARRESTOR AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
4. EXISTING SHUT OF VALVE AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
5. EXISTING DRINKING FOUNTAIN TO BE REMOVED BY PLUMBING CONTRACTOR.

NORTH

PLUMBING DEMOLITION FLOOR PLAN

SCALE 1/8"=1'-0" | 1

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120370 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/01/2021

STUDIO W ARCHITECTS

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Architects
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Suite 1640
Irvine, CA 92618
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PDS PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW H. GOODRAY No. M35836 Exp. 3/31/22 MECHANICAL STATE OF CALIFORNIA — DATE SIGNED 10/15/2021

GENERAL NOTES
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2. This sheet is not to be used for construction unless the architect's stamp and signature appear on the drawings and the status box indicated drawings have been released for construction.
3. These plans and prints thereof, as instruments of service, are owned by the architect and are for use on this project only.
4. Reproduction and/or distribution without the prior written consent of the architect is forbidden.
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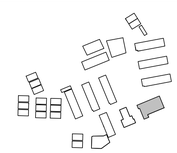
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA PLAN CHECK	
○ DSA BACK CHECK	
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CHARLES G EMERY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

PLUMBING FLOOR PLANS

Date	Project Number
10/19/2021	21009
Scale	Drawing Number
1/8" = 1'-0" & 1/4" = 1'-0"	P1.1
Drawn: NH / Checked: TP	

ARTHUR F COREY ELEMENTARY SCHOOL – MULTI-PURPOSE ROOM ALTERATION

DSA File No. 30-4
App. No. 04-120369
PTN. 66456-39

BUENA PARK SCHOOL DISTRICT

PROJECT MANUAL

OCTOBER 26, 2021

PROJECT #21008

Studio W Architects

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

SEALS PAGE

BUENA PARK SCHOOL DISTRICT
ARTHUR F COREY ELEMENTARY SCHOOL -MULTI-PURPOSE ROOM ALTERATION

OWNER:
Buena Park School District
6885 Orangethorpe Ave.
Buena Park, CA 90620

ARCHITECT:
Studio W Architects
400 Spectrum Center Drive
Suite 1640
Irvine, CA 92618

By: _____ 10/15/2021
Brian P. Whitmore, AIA, LEED AP — Date Signed
President & CEO

LICENSED ARCHITECT
BRIAN P. WHITMORE
No. C 30345
Ren. 9/30/23
STATE OF CALIFORNIA

CIVIL ENGINEER:
KPFF Consulting Engineers
18400 Von Karman Ave.
Suite 600
Irvine, CA 92612

By: _____ 10/15/2021
Ali Khamsi, PE — Date Signed
Managing Principal

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/21
CIVIL
STATE OF CALIFORNIA

STRUCTURAL ENGINEER:
Welsh Structures, Inc.
12722 Barrett Ln, Santa Ana, CA 92705

By: _____ 10/15/2021
Stephanie Welsh, S.E., Leed AP — Date Signed
President

REGISTERED PROFESSIONAL ENGINEER
STEPHANIE J. WELSH
No. 2998
Exp. 6-30-22
STRUCTURAL
STATE OF CALIFORNIA

PLUMBING ENGINEER:
Pocock Design Solutions
14451 Chambers Road
Suite 210
Tustin, California 92780:

By: _____ 10/15/2021
Andrew Gossman, PE, HFDP, LEED AP BD+C — Date Signed
Principal

REGISTERED PROFESSIONAL ENGINEER
ANDREW R. GOSSMAN
No. M35839
Exp. 3/31/22
MECHANICAL
STATE OF CALIFORNIA

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS
011000 Summary Studio W
012300 Alternates Studio W
012600 Contract Modification Procedures Studio W
012900 Payment Procedures Studio W
013100 Project Management and Coordination Studio W
013200 Construction Progress Documentation Studio W
013300 Submittal Procedures Studio W
014000 Quality Requirements Studio W
014200 References Studio W
015000 Temporary Facilities and Controls Studio W
016000 Product Requirements Studio W
017300 Execution Requirements Studio W
017419 Construction Waste Management Studio W
017700 Closeout Procedures Studio W
017823 Operation and Maintenance Data Studio W
017839 Project Record Documents Studio W
017900 Demonstration and Training Studio W

DIVISION 2 - SITE CONSTRUCTION
024119 Selective Demolition Studio W

DIVISION 3 - CONCRETE
031000 Concrete Forming and Accessories Welsh
032000 Concrete Reinforcing Welsh
033000 Cast-In-Place Concrete Welsh

DIVISION 5 - METALS
051200 Structural Steel Framing Welsh
055000 Metal Fabrications Studio W

DIVISION 6 - WOOD AND PLASTICS
061000 Rough Carpentry Welsh
062000 Finish Carpentry Welsh
064100 Paneling Studio W
068200 Fiber Reinforced Plastic (FRP) Panels Studio W

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
071909 Concrete Moisture and Alkalinity Testing Studio W
071920 Concrete Moisture and Alkalinity Barrier Studio W
072100 Building Insulation Studio W
076500 Flexible Sheet Flashing Studio W
079200 Joint Sealants Studio W

DIVISION 8 - DOORS AND WINDOWS
081113 Steel Doors and Frames Studio W
081416 Flush Wood Doors Studio W
083113 Access Doors and Frames Studio W

083214 Folding Aluminum-Framed Glass Doors Studio W.
084113 Aluminum-Framed Entrances and Storefronts Studio W
087100 Door Hardware Allegion
088000 Glazing Studio W

DIVISION 9 – FINISHES
092900 Gypsum Board Studio W
093000 Tiling Studio W
095123 Acoustical Tile Ceilings Studio W
096519 Resilient Tile Flooring Studio W
099100 Painting Studio W

DIVISION 10 - SPECIALTIES
101100 Visual Display Surfaces Studio W
101400 Signage Studio W
102800 Toilet and Bath Accessories Studio W
104400 Fire Protection Specialties Studio W

DIVISION 11 - EQUIPMENT
115217 Assistive Listening Devices Studio W

DIVISION 12 - FURNISHINGS
122116 Vertical Louver Blinds Studio W
126815 Folding Tables and Benches Studio W

DIVISION 22 – PLUMBING
220513 Common Motor Requirements for Plumbing Equipment Pocock
220518 Escutcheons for Plumbing Piping Pocock
220523 General-Duty Valves for Plumbing Piping Pocock
220529 Hangers and Supports for Plumbing Piping and Equipment Pocock
220553 Identification for Plumbing Piping and Equipment Pocock
220719 Plumbing Piping Insulation Pocock
221116 Domestic Water Piping Pocock
221119 Domestic Water Piping Specialties Pocock
221316 Sanitary Waste and Vent Piping Pocock
224216.13 Commercial Lavatories Pocock
224713 Drinking Fountains Pocock

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING - none

DIVISION 26 – ELECTRICAL - none

DIVISION 31 – EARTHWORK
311000 Site Clearing KPFF

DIVISION 32 - EXTERIOR IMPROVEMENTS
320120 Detectable Warning Surfaces Studio W
321216 Hot-Mix Asphalt (HMA) Paving KPFF
321313 Concrete Paving KPFF
323113 Chain-Link Fences and Gates Studio W

END OF TABLE OF CONTENTS

DIVISION 1
GENERAL REQUIREMENTS

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Use of premises.
   3. Work restrictions.
   4. Specification formats and conventions.
   5. Pollution Control.
   6. Storm Water Pollution Prevention Plan.
   7. Lead-Containing materials.
   8. Additional DSA requirements.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Multi-Purpose Room Alteration.

B. Project Location: Arthur F. Corey Elementary School.

C. Architect: Studio W Architects.

D. The Work consists of the following:
   1. The Work includes alteration of multi-purpose room and site work.
   2. The intent of these drawings and specifications is that the alteration, rehabilitation or reconstruction is to be in accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the contract documents wherein the finished work will not comply with Title 24, California Code of Regulations, a Construction Change Document, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by Division of the Sate Architect before proceeding with the repair work.

1.4 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.5 WORK RESTRICTIONS

A. On-Site Work Hours:
   1. Work shall be generally performed inside the existing building during normal business working hours of 8 a.m. to 5 p.m., Monday through Friday, except otherwise indicated.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI's MasterFormat 2004 numbering system.
   1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
   2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.7 POLLUTION CONTROL

A. Provide positive methods, means and facilities required to prevent contamination of the soil, water or atmosphere by the discharge of noxious substances from the construction operations.

1.8 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. The contractor shall submit a Storm Water Pollution Prevention Plan for approval by the City's Public Works and Community Development Departments. The plan shall show erosion control measures and indicate locations of staging, fueling, equipment and employee parking, and storage/stockpile locations. Locations for concrete washout shall be shown, as well as gravel site entrances and/or metal grates to keep soil from being deposited on City streets. The plan shall note that street sweeping shall occur as often as necessary, to ensure that no dirt or dust will remain on City streets. Drip pans shall be used under parked equipment and visqueen shall be shown on the plan to protect the soil in the fueling area. Only minor vehicle maintenance shall occur on-site. Maintenance shall occur in the fueling area and soil shall be protected by drip pans and visqueen.

B. Prepare a Storm Water Pollution Prevention Plan (SWPPP) and file a Notice of Intent with the State Water Resources Control Board for this project. The SWPPP will provide Best Management Practice (BMP) methods and controls for wet weather grading activities and erosion control for both onsite and offsite improvements, in accordance with the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The SWPPP shall include an erosion control plan.

1.9 MISCELLANEOUS PROVISIONS

A. General: Comply with the Project Conditions of Approval for both noise and dust control. If there is any conflict between drawings and specifications and the Project Conditions of Approval regarding noise and dust control, the Project Conditions of Approval shall govern.

B. Noise Control: The Contractor shall install noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction Equipment noise at the Site shall be limited and only as permitted by applicable law, rule or regulation. If classes are in session at any point during the progress of the Work, and, in the Owner's reasonable discretion, the noise from any Work disrupts or disturbs the students or faculty or the normal operation of Owner, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

C. Dust Control. The Contractor shall be fully and solely responsible for maintaining and upkeeping all areas of the Site and adjoining areas, outdoors and indoors, free from flying debris, grinding powder, sawdust, dirt and dust as well as any other product, product waste or work waste, that by becoming airborne may cause respiratory inconveniences to persons, particularly to students and Owner's personnel. Additionally, the Contractor shall take specific care to avoid deposits of airborne dust or airborne elements. Such protection devices, systems or methods shall be in accordance with the regulations set forth by the EPA and OSHA, and other applicable law, rule or regulation. Additionally, the Contractor shall be the sole party responsible to regularly and routinely clean up and remove any and all deposits of dust and other elements. Damage and/or any liability derived from the Contractor's failure to comply with these requirements shall be exclusively at the cost of the Contractor, including, without limitation, any and all penalties that may be incurred for violations of applicable law, rule or

regulation, and any amounts expended by the Owner to pay such damages shall be due and payable to the Owner on demand. Contractor shall replace any damages property or part thereof and professionally clean any and all items that become covered or partially covered to any degree by dust or other airborne elements. If classes are in session at any point during the progress of Work, and, in the Owner's reasonable discretion, flying debris, grinding powder, sawdust, dirt or dust from any Work disrupts or disturbs the students or faculty or the normal operation of the college, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal college hours and make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

1.10 LEAD-CONTAINING MATERIALS.

A. The Contractor shall assume that all ceramic tile and painted or varnished surfaces in the school district contain detectable levels of lead which trigger compliance with California Code of Regulation, Title 8, Section 1532.1. In addition, waste products from these materials could contain lead at levels which are subject to the hazardous waste requirements in the California Code of Regulations, Title 22, Sections 666260.1 - 66263.12 and 66268.1 - 66268.124 and the health and Safety Code Section 25157.8 and 25163, subdivision (c).

B. It is the Contractor's responsibility to handle and dispose of these materials in accordance with the regulations. If failure to comply with these regulations results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective action.

C. Lead-based paint should be removed only by professionals trained in hazardous material removal. A trained professional must follow very detailed procedures to minimize, control and contain lead dust generated by the removal process.
   1. The room should be sealed from the rest of the building. All furniture, carpets and drapes should be removed.
   2. Workers should wear respirators designed to avoid inhaling lead.
   3. No eating or drinking should be allowed in the work area. All food and eating utensils should be removed from the room. All cabinets as well as food contact surfaces should be covered and sealed.
   4. Occupants should be kept out of the room until the job is completed.
   5. Clothing worn in the room should be disposed of after working. The work clothing should not be worn in other areas of the building.
   6. Debris should be cleaned up using special vacuum cleaners with HEPA (high efficiency particle absorption) filters. A wet mop should be used after vacuuming.

1.11 ADDITIONAL DSA REQUIREMENTS

A. Comply with the following:
   1. Compliance with Title 24, for Parts 1-6 and 9.
   2. Title 24, Parts 1-5 shall be kept on site during construction.
   3. If any conflict or inconsistencies exist between the specifications and the drawings (including the general notes), more stringent requirements shall take precedence.
   4. Addenda:

a. In accordance with Section 4-338(a) of the California Administrative Code, changes or alterations of the approved plans and specifications prior to the letting of a construction contract for the Work shall be made by means of addenda, which shall be submitted to and approved by Division of the Sate Architect (DSA) prior to distribution to contractors.
b. Addenda shall be stamped and signed by Architect or Engineer in general responsible charge of preparation of the plans and specifications, and by the Architect or Engineer delegated responsibility for the portion affected by the addenda.
c. Addenda issued during bidding, if any, will be inserted following this page in the Contract Documents sets issued for construction. The provision of all addenda shall become part of the Contract Documents and Contractor shall be obligated to construct the Project in accordance with the Contract Documents as modified or supplemented by the addenda provisions.

5. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation. (IR-A6) (Section 4-338(c), Part 1)
6. Construction Change Document (Section 4-338 (c), Part 1) must be signed by all the following:
   a. A/E of Record.
   b. Owner (change order only).
   c. SEOR (when applicable).
   d. Delegated Professional Engineer (when applicable).
   e. DSA.
7. Project Inspector and testing lab must be employed by the Owner and approved by all of the following:
   a. A/E of Record.
   b. SEOR (when applicable).
   c. DSA.

B. Tests and Inspections - Chapter 17A:
1. All tests shall be performed by a testing facility acceptable to the architect and DSA. The testing facility shall be directly employed by the school district and no other entity or individual. Section Title 24, Part 1, Section 4-333 and 4-335.
2. Test reports shall be addressed to, and sent to, the school district by the testing facility. Copies of all test reports shall be sent to DSA, the architect, the structural engineer, and the project inspector by the testing facility. All reports shall be sent within 14 days of the date of the test. See Title 24, Part 1, Section 4-333 and 4-335.
3. A Verified Report, sighed by the California licensed civil engineer in charge of the testing facility which conducted the tests, shall be submitted to DSA upon completion of the project. The verified report shall state that all tests and inspections were made as required by the DSA approved documents. If the tests or inspections indicate that materials or workmanship did not meet the requirements of the DSA approved documents, the Verified Report shall list all noncompliant work. A copy of all test reports involving unresolved noncompliant work shall be attached to the Verified Report. In the event that not all required tests or inspections were made by the testing facility making this verified report, those tests and inspections not made shall be listed on the Verified Report. See Title 24, Part 1, Section 4-333 and 4-335.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. All substitutions affecting access compliance safety, fire life safety, or structural safety shall be considered as Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE

A. As indicated on Drawings.

END OF SECTION 012300

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:
   1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect may issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, or Changes not affecting the Structural Safety, Access Compliance or Fire & Life Safety portions of the work, on AIA Document G710, "Architect's Supplemental Instructions" or an equivalent form acceptable to District and subject to DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements for DSA Construction Change Document – Category B.

1.4 PROPOSAL REQUESTS (BULLETIN)

A. Owner-Initiated Proposal Requests: Architect may issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.5 CONSTRUCTION CHANGE PROCESS - DSA

A. Changes or alterations of the approved plans or specifications after a contract for the work has been let affecting the Structural, Access or Fire-Life Safety portions of the project shall be made only by means of Construction Change Documents submitted to and approved by DSA prior to commencement of the work shown thereon. Construction Change Documents shall comply with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements. Construction Change Documents shall be made using DSA form 141 and state the reason for the change and the scope of work to be accomplished, and, where necessary, shall be accompanied by supplementary drawings referenced in the text of the change order. All Construction Change Documents and supplementary drawings shall be stamped and signed by the architect or engineer in general responsible charge of observation of the work of construction of the project and by the architect or registered engineer delegated responsibility for observation of the portion of the work of construction affected by the change order, shall bear the approval of the school board and shall indicate the associated change in the project cost, if any. One copy of each Construction Change Documents is required for the files of DSA.

B. Construction Change Documents shall be signed by Architect of Record, Owner, Structural Engineer (when applicable), Delegated Professional Engineer (when applicable), and DSA.

C. No changes shall be made to approved documents without DSA approval.

D. All Construction Change Documents shall be signed by Architect and approved by DSA.

1.6 CONSTRUCTION (FIELD) CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with Continuation Sheets.
      b. Submittals Schedule.
      c. Contractor's Construction Schedule.
   2. Submit the Schedule of Values to Architect at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.
   3. No payment applications will be signed by the Architect prior to the Contractor submitting, and the Architect reviewing, a schedule of values.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Submit draft of AIA Document G703 Continuation Sheets.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.
      1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times:
   1. The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
   2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor's Construction Schedule (preliminary if not final).
   4. Products list.
   5. Schedule of unit prices.
   6. Submittals Schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   9. Copies of building permits.
   10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   11. Initial progress report.
   12. Report of preconstruction conference.
   13. Certificates of insurance and insurance policies.
   14. Data needed to acquire Owner's insurance.
   15. Initial settlement survey and damage report if required.

G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Project meetings.
   2. Requests for Interpretation (RFIs).

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for electronic submittals.
   2. Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
   3. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   4. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Submit electronic submittals directly to extranet specifically established for Project.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
4. Frequency of Attendance by Architect: Limited by Architect/Owner Contract.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing, if any.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for RFIs.
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Distribution of the Contract Documents.
   j. Submittal procedures.
   k. Preparation of Record Documents.
   l. Use of the premises.
   m. Work restrictions.
   n. Owner's occupancy requirements.
   o. Responsibility for temporary facilities and controls.
   p. Construction waste management and recycling.
   q. Parking availability.
   r. Office, work, and storage areas.
   s. Equipment deliveries and priorities.
   t. First aid.
   u. Security.
   v. Progress cleaning.
   w. Working hours.
3. Minutes: Record and distribute meeting minutes electronically.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. The Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written recommendations.
   n. Warranty requirements.
   o. Compatibility of materials.

p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
1) Review schedule for next period.
b. Review present and future needs of each entity present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.

15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes electronically.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.6 RFIs:

A. General:
   1. Contractor may submit a RFI to the Architect seeking clarification or interpretation of the contract documents. If in the Contractor's opinion the nature of the RFI requires a discussion, rather than simply an answer, the Contractor shall call the Architect to have such a discussion. The results of that discussion as well as all other RFI's must be presented in writing on a form approved in advanced by the Architect along with any supporting information or data, as well as the Contractor's recommended resolution. An oral RFI or a RFI presented on an unapproved form, or without adequate supporting information and Contractor's recommended solution, will be attributed solely to the contractor. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction means, methods, techniques, sequences, or procedures of the Contractor.
   2. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
   3. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information which is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the Architect in responding to a RFI.
   4. Architect's response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

B. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

C. Frivolous or Unnecessary RFIs: Cost of design professional’s time will be billed or deducted from progress payment.

D. Electronic RFIs: Follow vendor's instruction.
   1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow 21 days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

F. RFI Log: Prepare, maintain, and submit as instructed by electronic submittal vendor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. RFI Form.

END OF SECTION 013100

RFI FORM

Project:	RFI No:
Project No:	
To:	Date:
From:	

Subject:
Discipline: Category
Specification Section Title:
Section Number: Page: Article/Paragraph:
Sheet Number: Detail:

Question:

Suggestion:

☐Attachment:

Undersigned certifies:

- Both drawings and specification sections were thoroughly reviewed.
- Processing time for frivolous RFIs will be charged back to Contractors at A/E billable rates.

Desired Response Date:	(However, A/E still have specified days to respond.)
Cost Impact: $	Schedule Impact: days
Drawing Impact:	Submitted by:
Signed:	Date:

Answer:

Answered by:

Signed: Date:

Copies: ☐ Owner ☐Consultants ☐ ☐
☐ File

1. A/E review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
2. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information that is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the A/E in responding to a RFI.
3. A/E response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

End of RFI Form

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Three Week Look-Ahead Schedule.
   4. Daily construction reports.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
   2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
   3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
   4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's final release or review.

B. Contractor's Construction Schedule: Submit three opaque copies of schedule, large enough (minimum 11 x 17) to show entire schedule for entire construction period.

C. Daily Construction Reports: Submit two copies at weekly intervals.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Concurrent with the development of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the submittal schedule with the Contractor's construction schedule described above.
   1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
   2. The Architect will review the schedule and indicate which submittals may be deleted from the submission requirement. The deletion of the submittal requirement for an item does not release the Contractor from any requirements of the Construction Contract, General Conditions or Plans and Specifications.

B. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
   1. Scheduled date for the first submittal.
   2. Related Section number.
   3. Submittal category.
   4. Name of subcontractor.
   5. Description of the part of the Work covered.
   6. Scheduled date for resubmittal.
   7. Scheduled date the Architect's final release or review.

C. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 15 days of the date established for "Commencement of the Work". The Construction Schedule must be submitted and accepted prior to approval of first pay application.
   1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as identified in the "Schedule of Values".
   2. Within each time bar indicate estimated completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
   3. Prepare the schedule on a sheet, or series of sheets, of stable reproducible media, of sufficient width to show data for the entire construction period.
   4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
   5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
   6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating "pre-calculated" and "actual" costs. On the line show dollar-volume of work performed as of the dates used for preparation of payment requests.
   1. Refer to Section "Payment Procedures" for cost reporting and payment procedures.

2.3 THREE WEEK LOOK-AHEAD SCHEDULE

A. Prepare weekly (or as determined by scheduled meeting times), prior to Project meetings, a computer-generated 3-week look-ahead schedule (bar chart) which is consistent with the Contractors schedule and depicts daily labor activities. The schedule will consist of the prior week, current week and the following 3 weeks.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial Completions and occupancies.
   19. Substantial Completions authorized.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates changes, including, but not limited to, changes in durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of reviewed schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Submittals Schedule Form.

END OF SECTION 013200

SUBMITTAL SCHEDULE FORM

☐ Preliminary Submittal Schedule: Include submittals required during the first 60 days of construction.
☐ Complete Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

Project: From:

To: Date:

Scheduled Initial Submittal Date	**Spec Section**		**Type:** ☐ **Action** ☐ **Info Only**	**Name of Subcontractor**	**Description**	**Scheduled Date of Approval**
	No.	**Title**				

End of Submittal Schedule Form

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for electronically submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Consult individual sections of specifications for specific submittals required under those sections and for further details and descriptions of requirements.

C. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports.
5. Division 1 Section "Closeout Procedures" for submitting warranties.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
9. Other Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Processing: All costs for electronic submittal, printing, preparing, packaging, mailing, or delivering submittals for initial submittals and all costs for re-printing, re-drawing, re-drafting, re-packaging, re-submitting, and re-mailing or re-delivering as required for all re-submittals shall be included in Contract Sum.

B. Sequence: Transmit each submittal in sequence which will not result in Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

E. Multiple Reviews: The Contractor shall also be responsible for all costs to Architect or Architect consultants for reviews requiring more than 2 reviews for same specification section.

F. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Review: Allow 21 days for review of each submittal. Architect will request for more time if needed.

G. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked "Approved" or "Furnish as Noted".

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating approval by Architect.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
   1. Submit request using attached form at end of section.
      a. Indicate date, project name, contractor name, address, and specific drawing (sheet number) required.
      b. Signed by Contractor agreeing with terms and conditions.

PART 2 - PRODUCTS

2.1 ELECTRONIC SUBMITTALS

A. General: Prepare and submit Submittals required by individual Specification Sections.
   1. Submit electronic submittals directly to extranet specifically established for Project.
   2. Vendor:
      a. Submittal Exchange (Basis of Design)
      b. Or equal.
   3. Contractor shall pay for all-inclusive use of Submittal Exchange by all project team members; data storage, security, and backup; setup, training, and support; and archiving once construction is complete.
      a. Documentation processed, housed and archived shall include but not limited to: Submittals, Addendum, Plans, Specs, Field Reports, Photos, Weekly Reports, Notice of deviations, Punch List, RFI's RFP's ASI's, CCD's, Cost Proposals, Test Reports, Meeting Notes., and Close Out.

2.2 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
      a. Circle items applicable.
      b. Cross-out items not applicable.
      c. Select item number if required.
   3. Submittal data must include complete documentation relating to all the specified features
   4. Include the following information, as applicable:
      a. Manufacturer's Submittal Form with all the options selected when available.
      b. Manufacturer's written recommendations.
      c. Manufacturer's product specifications.
      d. Manufacturer's installation instructions.
      e. Standard color charts.
      f. Manufacturer's catalog cuts.
      g. Wiring diagrams showing factory-installed wiring.

h. Printed performance curves.
i. Operational range diagrams.
j. Mill reports.
k. Standard product operation and maintenance manuals.
l. Compliance with specified referenced standards.
m. Testing by recognized testing agency.
n. Application of testing agency labels and seals.
o. Notation of coordination requirements.

5. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Do not use words "by others." Identify exactly who is responsible for the work.
   c. Identification of products.
   d. Fabrication and installation drawings.
   e. Roughing-in and setting diagrams.
   f. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   g. Shopwork manufacturing instructions.
   h. Templates and patterns.
   i. Schedules.
   j. Design calculations.
   k. Compliance with specified standards.
   l. Notation of coordination requirements.
   m. Notation of dimensions established by field measurement.
   n. Relationship to adjoining construction clearly indicated.
   o. Seal and signature of professional engineer if specified.
   p. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit 4 sets of prints and one electronic copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.

F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.3 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be

signed by an officer or other individual authorized to sign documents on behalf of that entity.

2. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

2.4 DEFERRED APPROVALS AND DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit 3 copies of a statement, signed and sealed by Structural Engineer Licensed in California, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
   1. Coordinate the work; do not delegate responsibility for coordination to any subcontractor.
   2. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
   3. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections.
   4. Trade submittals with “By Others”, “By General Contractor”, or similar coordination and work scope are not allowed. Identify, acknowledge, and resolve scope of work prior to submittal by Contractor. No extras will be allowed. Provide complete and coordinated submittals.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

F. Architect's and Consultant's review shall neither be construed as complete check nor relieve the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission as specified.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Electronic Files Transfer - Architectural Form.

END OF SECTION 013300

Subject: Architectural Electronic Files

Date: _____

Contractor Name: _____

Address: _____

Project: _____

At your request, we will provide electronic files for your convenience and use in the preparation of shop drawings related to _____, subject to the following terms and conditions:

Our electronic files are compatible with AutoCAD. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in the preparation of shop drawings for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub consultants that may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and/or involvement from each electronic display.

We will furnish you electronic files of the following architectural drawings: _____.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

If these terms are acceptable to you, please sign in the space provided below as evidence of our mutual understanding and agreement for this service. One signed copy of this agreement shall be returned to our office prior to delivery of the electronic files.

Very truly yours,

Architect

_____ _____

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:
   1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
   2. Other Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups:

1. Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
2. Comprehensive, completely integrated mockups of separate trades showing interface conditions, transitions, and relationships between materials and finishes.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Description of test and inspection.
   3. Identification of applicable standards.
   4. Identification of test and inspection methods.
   5. Number of tests and inspections required.
   6. Time schedule or time span for tests and inspections.
   7. Entity responsible for performing tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A licensed professional engineer who is legally qualified to practice in California and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An DSA approved NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

A. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

D. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

E. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes list of references.

1.3 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. “AHJ”: Agency having jurisdiction.

C. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

D. “Compatible”: When used for products, it shall comply with requirements including products recommended/ required by the manufacturer for warrantee acceptance.

E. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

I. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

J. “Owner”: As defined in Division 1 section “Summary”.

K. "Provide": Furnish and install, complete and ready for the intended use.

L. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
   2. Copies of standards and applicable building codes (Title 24 Parts 1-5) shall be kept on-site during construction.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations.

E. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

F. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

G. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include the following:
1. Division 1 Section "Summary" for limitations on utility interruptions and other work restrictions.
2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 1 Section "Execution Requirements" for progress cleaning requirements.
4. Other Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service:
1. Owner's existing sewer system is available for use without metering but will be billed to Contractor for use charges.

C. Water Service:
1. Water from Owner's existing water system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

D. Electric Power Service:

1. Electric power from Owner's existing system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

E. Sanitary Facilities:
1. Pay sanitary service use charge for temporary toilets, wash facilities, and drinking water for use of construction personnel.

1.5 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with 2019 CEC.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized steel bases for supporting posts.

B. Wind Screen Fabric: Green.

2.2 TEMPORARY FIELD OFFICES

A. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading located within construction area or within 30 feet of building lines. Comply with NFPA 241.

B. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

C. Sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices and pay for services for following:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack board.
   3. Drinking water and private toilet.
   4. Coffee machine and supplies.
   5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
   6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
   7. Internet access:
      a. DSL or Cable (if available) service separate from the dedicated telephone line to field office and Inspector's/Architect's field office at time of project mobilization. Provide high speed connection, maintain and pay for usage.
      b. Internet access shall be through wireless WiFi router, 100 Mbps minimum.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, electric, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
   1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Install temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Install temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Install temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Install electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Install temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

A. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

B. Parking: Provide temporary or use designated areas of Owner's existing parking areas if approved for construction personnel.

C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

D. Project Identification and Temporary Signs: Provide Project identification. Install signs where directed to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.
   3. Provide a 4'-0" x 8'-0" project sign constructed of 1/2 inch plywood or 10 mil corrugated mounted to 4"x4" posts 8'-0" long set 2'-0" deep into earth.
   4. Project sign shall include a graphic of the building (available from the Architect), Architect, Consultants, District, project, funding members with titles, and Contractor with contact information for the contractor. Text and layout shall be submitted for approval prior to installation.
   5. Location of project sign shall be coordinated with District's representative.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

F. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 1 Section "Summary."

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
   1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or as indicated on Drawings.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

F. Install full coverage with green wind screen fabric to block viewing through construction fencing. Wind screen fabric shall be anchored or weighted sufficiently to resist design wind loads indicated on Drawings.

G. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Construct dustproof partitions with 2 layers of 3-mil polyethylene sheet on each side. Cover floor with 2 layers of 3-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
   3. Insulate partitions to provide noise protection to occupied areas.
   4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
   5. Protect air-handling equipment.
   6. Weather strip openings.
   7. Provide walk-off mats at each entrance through temporary partition.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses.
   1. Prohibit smoking in construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and product substitutions.

B. Related Sections include the following:
   1. Division 1 Section "References" for applicable industry standards for products specified.
   2. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Other Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Proposed products by manufacturers not listed in Manufacturers list.

C. Basis-of-Design: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating “or equal” products of other named manufacturers.

D. District Standard: Where a specific manufacturer's product is named and accompanied by the words "District Standard," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics pre-selected by the District.
   1. District seeks to match products currently in use on other campuses; No substitution allowed.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
   1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
   2. Form: Tabulate information for each product under the following column headings:
      a. Specification Section number and title.
      b. Generic name used in the Contract Documents.
      c. Proprietary name, model number, and similar designations.
      d. Manufacturer's name and address.
      e. Supplier's name and address.
      f. Installer's name and address.
      g. Projected delivery date or time span of delivery period.
      h. Identification of items that require early submittal approval for scheduled delivery date.
   3. Completed List: Submit 3 copies of completed product list within days specified in General Conditions. Include a written explanation for omissions of data and for variations from Contract requirements.
   4. Architect's Action: Architect will respond in writing to Contractor within 21 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use form provided at end of Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, environmental, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: Architect will notify Contractor of acceptance or rejection of proposed substitution within 21 days of receipt of request.
   a. Form of Acceptance: Change Order.
   b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. All substitutions affecting the Structural, Access or Fire-Life Safety portions of the project shall be submitted to DSA for approval as a Construction Change Directive in accordance with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements.

D. The cost for any additional design or engineering required to gain DSA approval of a substitution shall be borne solely by the contractor. Any delay impacts resulting from DSA review and approval of substitutions shall be borne solely by the contractor.

E. Named Product and Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

F. District Standard Products Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Changes to the approved drawings and specifications shall be made by an addendum or a Construction Change Document approved by the Division of the State Architect, as required by Section 4-338, Part 1, Title 24, CCR.

B. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
   3. Refer to other sections for specific content requirements and particular requirements for submitting special warranties.

C. Warranty Period: Warranty period specified in each sections are minimum requirements. Do not modify manufacturer’s standard warranty period if the manufacturer’s warranty has longer warranty period.

D. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
   6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
   3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
   5. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or an equal product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with “or equal”.

6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Product Substitutions" Article to obtain approval by Architect for use of an unnamed product.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
   a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include custom or premium items.
   b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes standard, custom, and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 35 days after the Notice to Proceed**.** Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   2. Requested substitution does not require extensive revisions to the Contract Documents.
   3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   4. Substitution request is fully documented and properly submitted.
   5. Requested substitution will not adversely affect Contractor's Construction Schedule.
   6. Requested substitution has received necessary approvals of authorities having jurisdiction and has paid any fees.
   7. Requested substitution is compatible with other portions of the Work.
   8. Requested substitution has been coordinated with other portions of the Work.
   9. Requested substitution provides specified warranty.
   10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

11. Furnish samples upon requested by Architect.
12. Attached Request for Substitution Form shall used for substitution requests.

C. Substitutions for products or systems involving structural, fire/life safety and access compliance will be considered a Construction Change Document or Addendum, and will require DSA approval. This will add time required to review those substitutions requiring DSA approval. Contractor is solely responsible for all documentation and time required to obtain DSA approval.
   1. The use of a product other than specified or noted on the Drawings will require the Contractor to get Engineer, Architect and DSA approval.
   2. The Contractor shall be responsible to provide any information, calculations or drawings to show compliance with the DSA approved drawings and provide all documentation to the Architect and/or Engineer of record.
   3. Any changes or "substitutions" that impact or relate to DSA requirements for structural, ADA or fire and life safety MUST be approved by DSA prior to proceeding with the work.
   4. The Contractor shall also be responsible for all costs to the DSA, Architect or Architect consultants for review, co-ordination, and approval by the DSA.
      a. All costs for submittal to DSA and Architect/ design team expenses shall be back charged to the Contractor.

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Product List Form.
   2. Similar Installation List Form.
   3. Substitution Request Form.

END OF SECTION 016000

SUBSTITUTION REQUEST FORM

Substitutions are only allowed within number of days specified. Use this for m for requesting "or equal" products and materials.

Project:	Substitution Request Number:
	From:
To:	Date:
	Project Number:

Specification Section Title:		
Section Number:	Page:	Article/Paragraph:
Specified Item:		

Proposed Substitution:	
Manufacturer:	Address:
Contact Name:	Phone Number:
☐ Comparison between proposed substitution and specified product is attached. Note all differences.	

Reason for not using specified item:
☐ Specified product is no longer available.
☐ Substitution will improve lead time by _____ days
☐ Substitution will save Owner $ _____
☐ Other:

☐ List 3 similar installations including project name, address, owner, and date installed is attached.
Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explanation attached.

Supporting Data Attached:
☐ Product Data (indicate any options to be included)
☐ Drawings ☐ Test Reports ☐ Samples ☐ Color Chart ☐ Other:

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will not affect or delay Construction Progress Schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

- Substitutions for products or systems involving structural, fire/life safety and access compliance will require AHJ approval. This will add time required to review those substitutions requiring AHJ approval. Contractor is solely responsible for all documentation, cost, and time required to obtain AHJ approval.

Submitted by:	Firm:
Signature:	Date:
Comments:	

A/E Review:
☐ Approve Substitution.
☐ Approve Substitution as Noted.
☐ Reject Substitution. Use specified product.
☐ Reject Substitution. Use specified product. Substitution request received too late.

Signed by:	Date:
Comments:	

Owner's Review and Action (Approval of substitution is not valid without Owner's signature)
☐ Substitution approved.
☐ Substitution approved as Noted.
☐ Substitution rejected. Use specified product.

Signed by:	Date:

Comments:

End of Substitution Request Form

PRODUCT LIST FORM

☐ Preliminary Product List.
☐ Complete Product List.
Include a written explanation for omissions of data and for variations from Contract requirements.

Project: ______________________________ From: ____

To: ______________________________ Date: ____

Spec Section		**Early approval?** ☐ **Yes** ☐ **No**	**Product**	**Model No.**	**Manufacturer**	**Supplier**	**Installer**	**Delivery Date**
No.	**Title**							

End of Product List Form

SIMILAR INSTALLATION LIST FORM

Provide minimum 5 similar installations within last 3 years.

Project: _____ From: _____

To: _____ Date: _____

	Date of Installation	Project Name	Owner Info	GC Info	Architect info
1					
2					
3					
4					
5					
6					
7					
8					

End of Similar Installation List Form

SECTION 017300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Progress cleaning.
   3. Starting and adjusting.
   4. Protection of installed construction.
   5. Correction of the Work.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
   2. Division 1 Section "Submittal Procedures" for submitting surveys.
   3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Provide protection against weather, rain, wind, storms, frost and heat so as to maintain all work and materials free from injury or damage.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.

1.5 QUALITY ASSURANCE

A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. IOR's Inspection procedures.
   2. Warranties.
   3. Extra Materials.
   4. Final cleaning.
   5. DSA project closeout and Final Certification of Construction.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
   2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
   3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   5. Division 1 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
   6. Other Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 DEFINITIONS

A. IOR: Inspector of Record.

B. Inspection: IOR will inspect, not the Architect.

1.4 SUBMITTALS

A. Submit a copy of Title 24 Certificate of Acceptance forms submitted to enforcement agency.

1.5 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting IOR's inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. IOR's Inspection: Submit a written request for IOR's inspection for Substantial Completion. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after IOR's inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.6 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final IOR's inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
   2. Submit certified copy of Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. IOR's Inspection: Submit a written request for final IOR's inspection process for acceptance. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after IOR's inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use form attached.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date specified in General Conditions.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Include Table of Contents.
   3. Identify content with specification section number and title.
   4. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

5. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

1.9 EXTRA MATERIALS

A. Deliver to Owner's facility manager extra materials specified in each section.

B. Organize submitted materials in orderly sequence based on the table of contents of the Project Manual.
   1. Itemize each material and quantity in 8-1/2 by 11-inch paper.

C. Label each items for easy identification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting IOR's inspection for certification of Substantial Completion for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

3.2 DSA PROJECT CLOSEOUT AND FINAL CERTIFICATION OF CONSTRUCTION

A. Verified Reports: Per Title 24 Part1, Section 4-336.

B. Final Certificate of Construction: Per Title 24 Part1, Section 4-339.

C. Duties of Contractor: Per Title 24 Part1, Section 4-343.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
    1. Punch-List Form.

END OF SECTION 017700

PUNCH-LIST FORM

☐ Preliminary Punch-List.
☐ Final Punch-List.

Project:	From:
To:	Date:

Item No.	Room No.	Area	Description	Completion Date	A/E Verification

End of Punch-List Form

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Maintenance manuals for the care and maintenance of products, materials, and finishes.

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
   3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
   4. Other Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return 1 copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit 1 copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.

3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
   1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
   4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
   5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   3. Gas leak.
   4. Water leak.
   5. Power failure.
   6. Water outage.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions.
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard printed maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.

B. Related Sections include the following:
   1. Division 1 Section "Closeout Procedures" for general closeout procedures.
   2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Other Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit 1 set of marked-up Record Prints.

B. Record Specifications: Submit 1 copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit 1 copy of each Product Data submittal.
   1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Identification: As follows:
      a. Project name.
      b. Date.
      c. Designation "PROJECT RECORD DRAWINGS."
      d. Name of Architect.
      e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
   4. Assemble in single binder with table of contents.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Record Product Data Form.

END OF SECTION 017839

RECORD PRODUCT DATA FORM

Record Product Data is due no later than 10 calendar days after the date of Substantial Completion. Photocopy for continuation sheets. List products in order by specification section numbers.

Project Name:	From:
To:	Date:

Spec Section		**Originally Specified**		**Actually Installed**	
No.	**Title**	**Model**	**Manufacturer**	**Model**	**Manufacturer**

End of Record Product Data Form

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for requirements for preinstruction conferences.
   2. Other Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

A. Instruction Program: Submit 2 copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. At completion of training, submit 1 complete training manual(s) for Owner's use.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written performance-based test.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

DIVISION 2

SITE CONSTRUCTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Qualification Data: For demolition firm.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
   6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Storage or sale of removed items or materials on-site is not permitted.

B. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated. Patch and repair with similar materials.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts. Patch and repair with similar materials.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
1. Patch and repair with similar materials.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Division 1 Section "Construction Waste Management."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

DIVISION 3

CONCRETE

SECTION 031000

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Completion of subgrade preparation, formwork, ties, shoring, bracing, anchorage and blockouts as indicated on the Drawings and specified herein.

B. Related Sections:

1. Curbs, Gutters, Sidewalks and Driveways; refer to Section 321600.
2. Concrete Reinforcing; refer to Section 032000.
3. Cast-in-Place Concrete; refer to Section 033000.
4. Rough Carpentry; refer to Section 061000.

1.2 REFERENCED STANDARDS

A. Refer to Section 014219 for information concerning availability and use of references.

ACI 117-90 - Tolerances for Concrete Construction & Materials

ACI 347R-94 - Formwork for Concrete

ANSI/AHA A135.4 - Basic Hardboard

ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous types)

CRD-C-572-74 - Polyvinyl chloride Waterstops

DOC PS-1-95 - Construction and Industrial Plywood

WCLIB Std. No. 17. - Grading Rules for West Coast Lumber

WWPA - Western Lumber Grading Rules 2011 with Supplements

B. Conform to the requirements of Section 014523 – Testing and Inspection Services.

C. Construct and erect formwork in accordance with ACI 318 and 347, and Section 1905A of the California Building Code (CBC) 2019, Title 24, Part 2.

D. Design forms and falsework to adequately support live and dead loads, including equipment, concrete drops, pressures of foundations, etc.

E. Follow recommendations of ACI 318 and 347.

F. Title 24, Parts 1 and 2, California Building Code.

1.3 ARCHITECT'S REVIEW

A. Architect will review formwork for architectural suitability where exposed concrete finish occurs. Contractor shall be responsible for design of formwork for structural stability and sufficiency.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Earthen Forms: Provide earthen forms for footings only where the soil is firm and stable and the concrete will not be exposed, and subject to approval of the Division of the State Architect. Cut earthen forms square, neat and accurate to size. Clean bottoms of excavations.

B. Wood Forms: Provide wood forms**,** based on PS 1-09 Plywood or B-B Class I exterior, high density overlaid one side for forms, sound, undamaged, and clean, 5/8-inch thick minimum for exposed concrete work.

1. Lumber: Provide Douglas fir, construction grade lumber for framing, studding and bracing.

2. For site walls provide HDO or HDO 7 layer minimum grade B-B for all exposed walls.

C. Exposed Architectural Concrete: HDO or HDO B-B 7 Ply minimum for a smooth architectural finish. Seal all joints and edges.

2.2 COMPONENTS

A. Formed Construction Joints: Provide minimum 24 gage galvanized steel foam filled type, with release tape sealed slots, bent tab anchors, securable to formwork.

2.3 ACCESSORIES

A. Provide accessories and anchorages required, of sufficient strength, length and character to maintain formwork during pouring operations.

B. Use anchors and hangers which do not leave exposed metal at surface.

C. Use snap-off, removable, or adjustable type metal ties, hot-dip galvanized. Provide standard metal form clamp assembly, spreader type leaving no metal within 1 inch of concrete exposed face. Leave inner tie rod within concrete when forms are removed.

D. Provide colorless mineral oil type form coating, non-grain raising and non-staining type, Nox-Crete Company Nox-Crete Form Coating, or other approved equal.

E. Rigid foam plastic fillets may be used for chamfered corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to commencing work, inspect the work of others and verify that such work has been properly completed and installed to allow for proper installation of materials and methods required of this section.

B. Inspect forms in accordance with Title 24, Part 2, Section 1705A.3.5, California Building Code.

3.2 PREPARATION

A. Earthen Forms: Trench earthen forms at least two inches wider than footing widths shown on drawings. Construct wood edge strips at each side of trench at top to secure reinforcing and prevent trench from caving. Form sides of footings where earth caves. Tap form and clean debris and loose materials in earthen forms before depositing concrete.

B. Design of forms and shoring in excess of 3 feet in height, shall be by a California State registered Civil Engineer.

C. Verify accuracy of lines, levels, and centers.

D. All embedded items must be installed prior to placement of concrete - *NO EXCEPTIONS*.

3.3 APPLICATION

A. Construct formwork and appurtenances to meet design and code requirements. Construct of sound materials, of correct shape and dimensions, mortar tight, and of sufficient strength to prevent sagging, buckling, movement and failures. Provide adequate shores of wood or metal to safely carry imposed loads and adjustable to prevent displacements during the work.

B. Align joints and make them watertight.

C. Set reinforcing accurately and ensure secure placement.

D. Maintain tolerances of ACI 347, within 1/8-inch in 10 feet and ¼" maximum deviation from theoretical dimensions. Exposed concrete may require tighter specifications.

E. Assist in setting and placing blockouts and sleeves for materials and products to be embedded in and passing through concrete.

F. Set screeds and establish levels for tops of concrete for finish surfaces. Shape surfaces as indicated on drawings.

G. Screed supports for concrete over waterproof membranes or vapor barriers shall be of a cradle, pad, or base type which will not puncture membrane.

H. Wet formwork prior to placing concrete and keep wet during concrete curing process.

3.4 PROTECTION

A. Do not remove formwork, shoring and bracing until such time as masonry and concrete has gained sufficient strength to carry its own weight, and construction and design loads which are liable to be imposed upon.

1. Verify strengths by compressive strength test results. Loosen forms carefully. Do not wedge pry bars, hammers or other tools against masonry and concrete surfaces.

B. In addition to California Building Code Section 1905A, the following are minimum times for forms and shoring to remain in place prior to removal:

1. Footings and grade beams - 5 days.
2. Walls and columns - 14 days.
3. Beam sides - 10 days.
4. Beam and slab soffits - 28 days - Add temporary reshoring requirement.

END OF SECTION

SECTION 032000

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Completion of reinforcing steel bars, welded wire fabric, support chairs, bolsters, bar supports and spacers as indicated on the drawings and specified herein.

B. Related Sections:

1. Curbs, Gutters, Sidewalks and Driveways; refer to Section 321600.
2. Concrete Forming and Accessories; refer to Section 031000.
3. Cast-in-Place Concrete; refer to Section 033000.
4. Lightweight Structural Concrete; refer to Section 033116.
5. Concrete Unit Masonry; refer to Section 042200.

1.2 QUALITY ASSURANCE

A. Conform to the testing and inspection requirements of Section 014523 – Testing and Inspection Services.

B. Perform reinforcing work in strict conformance with Chapter 19A, Title 24, California Building Code (CBC) 2019, and CRSI, 2018, unless specified otherwise or required otherwise by local code jurisdiction.

1.3 REFERENCES STANDARDS

A. Refer to Section 014219 – Reference Standards for information concerning availability and use of references.

ACI SP-66(04) - Detailing Manual

ACI 318-14 - Building Code Requirements for Structural Concrete

ASTM A82 - Steel Wire, Plain, for Concrete Reinforcement

ASTM A185 - Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A497 - Steel Welded Wire Reinforcement, Deformed, for Concrete

ASTM A615 - Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A706 - Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

CRSI MSP, 29th Edition, 2018 - Manual of Standard Practice

AWS A5.1: 2012 - Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding

AWS A5.5: 2014 - Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding

AWS D1.4: 2018 - Structural Welding Code---Reinforcing Steel

B. In addition to CRSI specifications, follow ACI 315 and 318, AWS welding codes and qualifications, and ASTM A185, A615 and A706.

C. Testing of bars in accordance with Title 24, Section 1910A.2, Part 2.

1.4 TESTING

A. Comply with Title 24, Section 1910A.2

B. Where samples are taken from bundles as delivered from the mill, with the bundles identified as to heat number, and provided that the mill analysis accompany the report, then one tensile test and one bend test shall be made from a specimen from each 10 tons or fraction, of each size of reinforcing steel

C. Where positive identification of the heat number cannot be made or where random samples are to be taken, then one series of tests shall be made from each 2-1/2 tons or fraction, of each size of reinforcing steel.

D. Testing Laboratory shall perform chemical analysis of reinforcing for suitability for welding prior to welding. Welding reinforcing bars shall comply with ASTM A706.

1.5 SUBMITTALS

A. The Contractor shall be responsible for providing steel reinforcing as indicated on the Drawings for concrete reinforcing and as specified herein. Prepared Shop Drawings shall be reviewed by the Architect or Structural Engineer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Do not allow reinforcing materials to have direct contact with the ground. Cover materials adequately to prevent rusting, and contact with materials or construction injurious to proper bonding.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcing Bars: Deformed billet steel reinforcing bars, ASTM A615, plain finish (except ASTM A706 for welded bars where called for), see Drawings for grade.

1. When welding is required, provide reinforcing bars conforming to ASTM A706, including the additional requirements of AWS D1.4, as modified by 2019 CBC Standard Chapter 19A.

2. Where called for, provide ASTM A706.

2.2 ACCESSORIES

A. Welded Wire Fabric: Provide plain type, ASTM A185, in coiled rolls, plain finished, void of rust, dust, scale, paint, grease and other coatings.

B. Provide minimum 16 gauge galvanized annealed tie wires, and chairs, bolsters, bar supports, and spacers sized and shaped for strength and support of reinforcing. Plastic accessories may be acceptable if approved by Architect prior to use.

2.3 FABRICATION

A. Fabricate in accordance with details shown.

B. Accurately bend, cut and place bars as shown on Drawings and in accordance with the requirements of Title 24, Part 2, Section 1905A and ACI 318. Bend bars cold; heating of bars is not permissible. Do not bend or straighten bars in any manner that will injure materials.

C. Welding: Reinforcing to be welded shall comply with the requirements of Title 24, Part 2, Section 1903A.8 and ACI 318. Perform welding, where shown or approved, by the direct electric arc process in accordance with AWS D1.4 using E90 series low hydrogen electrodes., except E80 for ASTM A706, GRW reinforcing. Preheat 6 inches each side of joint. Protect joints from drafts during cooling process; accelerated cooling is prohibited. Do not tack weld bars. Clean metal surfaces to be welded of all loose scale and foreign materials. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds found defective, with chisel, and replace with proper welding.

1. Employ only experienced certified welding operators.

2. Prequalification of welds are to be in accordance with code and carbon equivalent of reinforcing not exceeding 0.75.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to commencing work of this section, inspect work of others and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required of this section.

3.2 INSTALLATION

A. Fabricate reinforcing in accordance with ACI 315. Locate reinforcing splices not shown on drawings, at points of least stress. Where shown or required, weld reinforcing bars in accordance with AWS D1.4.

B. Place reinforcing supported and secured against displacement. Do not deviate from true alignment.

C. Ensure that reinforcing used is clean, free of scale, dirt, dust, rust and other matter.

D. Provide lap splices for bars noted as "cont.". Provide a Class “B” lap splice in concrete and 72 bar diameters in masonry. Wire all laps and splices in welded wire mesh and provide side and end laps of at least 6 inches.

1. Spacing - minimum center-to-center distance between parallel reinforcing bars is to be in compliance with that shown on drawings, or in the absence of such information on drawings, the clear spacing is to be one bar diameter, but in no case less than 1-1/2 inch, nor less than 1-1/3 times the maximum size of aggregate.

2. Where possible, stagger splices of adjacent vertical bars.

E. Only splice reinforcing where shown or noted. Splices at other locations must be approved by the Architect. Provide continuous reinforcement between splice locations in vertical walls. No splices of vertical wall reinforcing may occur except at foundations, unless specifically approved by Division of the State Architect, and the Architect.

1. Securely tie reinforcing with 16 gage tie wire at all splices and intersections, and as may be directed.

2. Point ends of wire ties away from forms.

F. Stagger splices in adjacent horizontal wall reinforcing bars a minimum of 4 feet.

G. Provide dowels in footings and/or grade beams the same size and number as vertical wall or column reinforcing. Provide a minimum dowel projection equal to Class “B” lap splices unless noted otherwise.

1. Securely tie dowels in place before depositing concrete. Install No. 3 bars for securing dowels where no other reinforcement is provided.

H. Provide the minimum coverage of reinforcing by concrete:

MINIMUM COVER:
Inches (mm)

1. Cast against and permanently exposed to earth…… 3 (76)

2. Concrete exposed to earth or weather:

No. 6 through No. 18 bar…… 2 (51)
No. 5 bar, W31 or D31 wire, and smaller……. 1-1/2 (38)

3. Concrete not exposed to weather or in contact with ground: Slab, walls, Joists:

No. 14 and No. 18 bar…… 1-1/2 (38)
No. 11 bar and smaller…….. 3/4 (19)

4. Beams & Columns:

Primary reinforcement, ties, stirrups, spirals…….1-1/2 (38)

I. Reinforcing bars shall not be re-bent.

3.3 APPLICATION

A. Correction during concreting: Maintain capable steel workers during placement of concrete for properly resetting reinforcement displaced by runways, workers, or other causes.

B. Reinforcement: As a minimum for slab reinforcement, provide 6 x 6 W4.0 x W4.0 wire mesh ASTM A185, if no other reinforcement is indicated.

3.4 DEFECTIVE WORK

A. The following reinforcing work will be considered defective and may be ordered by Owner to be removed and replaced at no additional expense to Owner:

1. Bars with kinks or bends not shown on Drawings.
2. Bars injured due to bending or straightening.
3. Bars heated for bending.
4. Reinforcement not placed in accordance with Drawings or Specifications.
5. Rusty or oily reinforcement.

3.5 FIELD QUALITY CONTROL

A. Refer to Section 014523 - Testing and Inspection Services for requirements.

B. Prior to pouring concrete, notify all parties to the inspections, that reinforcing is ready for inspections. Secure approvals by testing laboratory and inspector before concrete operations commence.

3.6 CURING

A. Concrete (other than high-early-strength) shall be maintained above 50 degrees F. and in a moist condition for at least the first seven (7) days after placement, except when cured in accordance with Section 26.5.3.2 (a), ACI 318.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Completion of sand bed, vapor barrier, cast-in-place concrete, and finishes as indicated on the drawings and specified herein.

B. Related Sections:

1. Curbs, Gutters, Sidewalks and Driveways; refer to Section 321600.

2. Concrete Forming and Accessories; refer to Section 031000.

3. Formwork, Earthen forms: See Section 031000 Concrete Forming and Accessories.

4. Concrete Reinforcing: See Section 032000.

5. Miscellaneous steel, see Section 051200 Structural Steel Framing.

1.2 QUALITY ASSURANCE/SUBMITTALS

A. Conform with the requirements of Section 014523 - Testing and Inspection Services.

B. Perform concrete work in accordance with ACI 301 and 318, unless specified otherwise. Provide continuous inspection and testing for concrete placement in accordance with Sections 1705A.3 and 1905A Title 24, Part 2, California Building Code.

C. Sample Panels: When and where instructed to do so, provide on-site sample panel with specified finishes. Construct additional panels as may be necessary to gain approval of finishes desired. After rejection of panel, remove from site immediately. Approved and reviewed panel is to be left in place at site for project duration as a project standard.

D. Testing Laboratory Services:

1. Owner will employ and pay for an Independent Testing Laboratory to review the various concrete mixes required to produce concrete of the strengths required for the project. Submit and obtain approvals before proceeding with the work. Concrete mix shall be designed per Title 24, Part 2, Section 1905A1.15

2. Separately, Owner will employ and pay for a testing laboratory to perform tests and inspections, but the cost of subsequent and additional testing and inspections due to failed items will be backcharged to the Contractor.

E. Submit design mixes to Architect for Structural Engineer, and Testing Lab review and approval. Contractor shall pay for review of more than two (2) designs for each strength required.

F. Submit shrinkage test for each design minimum. Perform the following shrinkage tests for lightweight concrete, for each 150 cubic yards and fraction:

1. Specimens - 4-inch x 4-inch and 11 inch long bars, cured for seven (7) days in a moist room and as specified in ASTM C157. Make measurements at 7 day intervals until 35 days of curing has elapsed.

2. Allowable shrinkage of lightweight concrete used on project is not to exceed 0.05 percent after the 35 days of curing has elapsed.

1.3 REFERENCE STANDARDS

A. Refer to Section 014219 – Reference Standards for information concerning availability and use of references.

ACI 318 - Building Code Requirements for Structural Concrete and Commentary

ASTM C33 - Standard Specification for Concrete Aggregates

ASTM C94 - Standard Specification for Ready-Mixed Concrete

ASTM C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement

ASTM C156 - Standard Test Method for Water Loss [from a Mortar Specimen] through Liquid Membrane-Forming Curing Compounds for Concrete

ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete

ASTM C227 - Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)

B. All work under this section shall be in accordance with applicable provisions of CBC, 2019, Title 24, Part 2, Chapter 19A.

C. Refer to the following information for compliance of materials, products, and installation techniques: ASTM C33, C94, C150, C260, C494 and ACI 301, 304R-00 and 3051-14.

D. Handling and Placing: Concrete transported and placed as per ACI 318. Concrete shall be thoroughly compacted and worked into forms around reinforcing steel using suitable equipment. Vibrating of formwork will not be permitted.

E. Where conditions make placing difficult or reinforcing is congested, batches containing the same proportions of sand and cement used in the concrete plus a maximum of 50 percent of coarse aggregate shall be used.

F. Inspections: Notify the Architect, Structural Engineer, and the Division of the State Architect (DSA) at least forty-eight hours in advance of the first pour of concrete and sufficiently in advance of subsequent pours, see 1704A, Title 24, Part 2, California Building Code and chapter 7, section 7-145, Title 24, Part 1, California Administrative

Code.

G. Testing: The Inspector will take at least four cylinders of concrete from each day's run of 50 yards, or 2,000 sq. ft. of surface area for slabs, or fractional part thereof, per ACI 318. Field specimens of concrete taken and tested in accordance with 2019 CBC Standard. Label each cylinder with job name, date, number, result of slump test, and the point in the pour in the structure from which the sample was taken noted thereon. One cylinder shall be tested at seven days and two at 28 days. The fourth cylinder shall be stored for 56 days unless instructed otherwise. Core test to comply with ACI 318 if cylinder tests indicate deficiencies.

H. Embedded Items: Pipes and conduit in concrete, located, sized and if required, sleeved in accordance with the requirements of ACI 318. Bolts and anchorage devices embedded in concrete to fastened sills, tie-down columns and other structural and framing members to concrete installed and secured in place before concrete is placed.

1. Concrete shall be placed in a continuous operation between predetermined joint locations. Location of construction joints shall be as shown on the drawings or at locations approved by the Engineer and the Division of the State Architect.

2. Joints shall be straight, exactly horizontal or vertical and the surface of the concrete shall be level wherever a run is stopped. Reinforcement shall be extended through joints or dowels to develop the full strength of the reinforcement. Construction joints shall be per ACI 318.

1.4 TESTING

A. Provide free access to work. Provide laboratory design mix. No substitutions will be accepted. Cement and aggregates shall be tested.

B. Cement: Test Portland cement in accordance with Sections 1910A.1, Title 24, Part 2, and Section 26.4.1.1, ACI 318.

C. Core Tests: Take and test composite construction cores in accordance with Section 1910A.4, Title 24, Part 2

D. Batch Plant Inspection: Provide in accordance with Section 1705A.3.3, Title 24, Part 2.

E. Placing Record: Keep records of placing in accordance with Section 1705A.3.6, Title 24, Part 2.

F. Cylinder Test: Provide in accordance with Section 1905A.1.15, Title 24, Part 2.

G. Slump Test: Provide in accordance with ASTM C143 for each set of test cylinders.

H. Placing Inspection: Provide in accordance with ACI 318.

I. Moisture Testing: All slabs to receive flooring materials other than ceramic tile shall be calcium chloride dome tested at least 54 days after placement. Readings exceeding requirements of flooring manufacturer (generally 3 lbs. per 1,000 s.f. per 24 hours) will

require retesting prior to installation of flooring. Readings in excess of 5 lbs. per 1000 s,f, will require testing by Owner using petrographic analysis to determine water/cement ratio at time of placement.

1. All tests in areas where concrete was placed with a water/cement ratio in excess of .45 will be paid for by Owner, but may be back charged to Contractor.

J. Compaction Testing: Provide in accordance with ASTM D689.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cement: For site walls – Colton II - Provide ASTM C150 TYPE II/V conforming to requirements of 1903A.5, Title 24, Part 2. If aggregates contain reactive substances, reactive with cement alkalies they may not be used.

B. Aggregates:

1. Base and Aggregate base shall conform to the State of California, Department of Transportation (CALTRANS) Standard Specifications, Current Edition. All base, whether called out as aggregate base or base shall be in conformance with CALTRANS Section 26 for Class 2 Aggregate Base, 3/4-inch maximum. The maximum percentage of recycled material allowable shall not exceed 50% of the total volume of aggregate used.

2. Base and Aggregate Base shall be provided by a licensed commercial materials supplier. Certifications shall be submitted with each submittal. Use of on-site asphalt materials in aggregate base or base is strictly prohibited. The use of Crushed Miscellaneous Base is strictly prohibited.

3. Aggregates: ASTM C33, 1-inch maximum conforming to CBC 2019, Title 24, Part 2, 1903A.5 Aggregates and ACI 318.

C. Curing Materials:

1. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per square yard, complying with AASHTO M182, Class 2.

2. Moisture-Retaining Cover: One of the following, complying with ASTM C171:

a. Curing paper
b. Polyethylene film
c. Burlap Polyethylene-coated

3. Liquid Membrane-Forming Curing Compound: Liquid type non-wax membrane-forming curing compound complying with ASTM C309, Type I, Class B. Moisture loss not more than 0.055 gr./sq. cm. when applied at 200 sq. ft./gal/ product shall be compatible with finishes to be applied to concrete.

a. Products: Subject to compliance with requirements, provide one of the following:

"2000 Kure 1315"	BASF Building Systems.
"Kurez W Vox"	Euclid Chemical Co.
"Sealtight 1100-Clear"	W.R. Meadows, Inc.

b. Surface Treatment for Slabs Receiving Wood Flooring, Sheet Vinyl, or Resilient Flooring including Sheet vinyl and Vinyl Cementitious Tile, Carpet with a Vinyl, Rubber or Unitary Type Backing: Waterproof, Seal and Cure Application, CS 2000 by Creteseal (800) 278-4273, or equivalent, Floor Seal Technology, Inc. (800) 572-2344.

4. Warranty: 15 years Labor and Materials backed by a $1,000,000 Insurance Policy

a. A trained applicator shall apply CS 2000, or a technician must be on site during the spraying applications for verification to receive the 15 year warranty on floor coverings.

b. When a floor covering system is installed on a slab treated with the product according to manufacturer's instructions, the manufacturer shall warrant the floor covering system against delamination due to negative, ground originated moisture migration or moisture-born contaminates for a period of ten years from the date of original installation.

The warranty shall cover labor and materials necessary to repair or replace the floor covering system if repair cannot be made.

5. After pouring, placing, bullfloating, final finishing, soft cutting, and the surface of the concrete has hardened sufficiently to sustain foot traffic, CS 2000 Sealer shall be applied.

6. Apply CS 2000 Concrete Sealer at the rate of 200 square feet per gallon coverage. If puddling or bird bathing occurs, lightly broom product evenly over the substrate.

7. Continue brooming the product evenly over the substrate until the CS 2000 product has penetrated into the concrete.

8. Provide one of the following, or other approved equal:

Creteseal CS 2000.
Ashford Formula
Kure N Harden – By BASF

D. Water: Provide clean water free from injurious substances, per Section 26.4.1.3, ACI 318.

E. Vapor Barrier: Provide Stego Industries, 15-MIL Specifications, comply with ASTM E 1745, Class A, requirements.

F. Admixtures: *(No Calcium Chloride)* Admixtures to be used in concrete shall be subject to prior approval by the IOR and the Division of the State Architect, CBC 2019.

1. Water Reducing: Reduce water 5 percent minimum, increase 28 day compressive strength, decrease 21 day drying shrinkage, ASTM C494.

2. Provide one of the following, or other approved:

BASF The Chemical Co. Pozzolith 300 R.

3. Acceleration or Retarding: ASTM C494.

4. Air Entraining: 4 percent minimum, 6 percent maximum air content by volume, ASTM C260.

5. Admixtures shall be in accordance with Section 26.4.1.4 ACI 318.

6. Concrete Sealer: Dayton Superior “Cure & Seal 309 J18”, W.R. Meadows "VOCOMP®-25", or Sonneborn® Products "Kure-N-Seal W" as manufactured by BASF.

a. For site walls use Sinak HLQ 125.
b. 3000 psi concrete 3/8” – 1/2” aggregate.

7. Non-Slip Surface: Trowel finish aluminum oxide grains, at exterior stairs and where indicated on the Drawings.

8. Add shrinkage reducing agent, such as “Eclipse®” as manufactured by Grace Construction Products or Peramin® SRA as manufactured by Peramin.

2.2 COMPONENTS

A. Non-Shrink Grout: Premixed compound consisting of non metallic aggregate, cement, water reducing and plasticizing agents, capable of developing non-shrink characteristics in both the horizontal and vertical direction with minimum compressive strength of 4,800 p.s.i. in two (2) days, and 6,000 p.s.i. in twenty-eight (28) days.

1. Provide Embeco Grout as manufactured by BASF, or other approved by Five Star, Dayton Superior, or Sika.

B. Cement Grout and Drypack: Precision support grout shall be BASF Masterflow® 713 Grout as manufactured by Master Builders, Cleveland, Ohio consisting of a hydraulic cementitious system, specially graded and processed natural fine aggregate and additional technical components. Other products will only be acceptable providing written approval of the Engineer is obtained prior to bidding. Acceptance will be granted only upon satisfactory evidence proving that the substitute material meets the following

requirements, conforming to CRD C-621 Corps of Engineers.

1. Free of gas producing or releasing agents.

2. Free of oxidizing catalysts.

3. Free of inorganic accelerators, including chlorides.

4. Drypack: Pre-mixed grout shall be used. Use only enough water to make a stiff mix consistency. Pre-mixed grout shall be used under base plates per manufacturer's recommendations, and packed solid under pressure treated mudsills, per Structural Details, so as to obtain a continuous bearing. Minimum compressive strength of 6000psi.

C. Joint Materials: Provide tooled joints or plastic control joints.

1. Construction Joints: Provide metal keyed dividers for cold joints, subject to review and approval by Architect.

2. Expansion Joint Fillers:

a. 1/2-inch asphalt impregnated fiber conforming to ASTM D545 Type 5, where slab abutts wall or other vertical elements.

b. Where joint will be finished with sealant, set expansion strip with a 1/2-inch deep removable expansion strip cap.

D. Under Slab Vapor Barrier: 15 mil Stego Wrap, Fortifiber Building Systems, or W.R. Meadows, or equal, over 2” compacted sand. Refer to plans and Geotechnical Report for installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Certifications: Provide legible copies of the delivery tickets of each load of concrete with the following information:

1. Name and location of plant.
2. Serial number of ticket.
3. Date and truck number.
4. Name of contractor.
5. Name of project.
6. Type of class of concrete and how to be used.
7. Amount of concrete.
8. Time loaded, time of arriving and unloading at project site.
9. Water added at site and total water content.
10. Type, name and amount of admixtures.
11. Name and signature of person making slump tests.

12. Testing number of test cylinders.

3.2 PREPARATION FOR PLACEMENT

A. Remove foreign debris and matter which may have accumulated within forms, and close ports and openings left in formwork.

B. Thoroughly clean tools used in transportation, placing and consolidating concrete immediately after each pour.

C. Ensure that required inspections have taken place prior to pour.

3.3 APPLICATION

A. Mixes: The minimum concrete ultimate twenty-eight (28) day compressive strength to be per structural drawings and shall be controlled by the following method:

1. Designed Mix: Concrete mixes shall be based upon previously proven mixes and material tests made by a recognized testing agency. The design of such mixes shall be based on the ultimate strength of the concrete assumed in the design of the structure and shall take into consideration both the workability of the mix and the durability of the concrete. Refer to Sections 1903A and ACI 318.

2. When strengths in excess of 3,000 pounds per square inch are required, or special aggregates not having a record of satisfactory performance are used, or admixtures are used to reduce the cement content, ACI 318, shall be used to determine the mix.

3. Where design criteria in Title 24, Part 2, chapter 19A and ACI 318, provide for the use of a splitting tensile strength value of concrete as a modifier, laboratory tests shall be made in accordance with the CBC to establish the value of fct corresponding to the specified value of f'c.

4. Tensile-splitting tests of field concrete shall not be used as a basis for acceptance.

5. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement not less than 1 inch and not more than 4 inches.

6. The maximum water to cement ratio shall not exceed 0.5 (50%).

7. Project specific shrinkage test. Perform test using actual proposed mix with some aggregates used in the project. Limit 28-Day shrinkage to 0.045 percent.

B. Control Density Fill: Provide batch plant design mix of 4000 p.s.i., flowable concrete composed of 3000 lbs aggregate, 45 gals water, 50 lbs of cement and 400 lbs of flyash. Adjust proportions for materials as necessary and submit to Architect, for information.

3.4 CONVEYING

A. Handle concrete from mixer to location of placing as rapidly as practical, avoiding separation or loss of ingredients and rehandling. Use carts, wheelbarrows, concrete pumps, conveyors or buggies to deliver concrete to location of placement.

B. Do not permit a free fall of more than 4 feet when placing concrete.

C. Use elephant trunk spouts for placing concrete in vertical elements. Space so that concrete does not exceed 4 foot flow horizontally.

3.5 PLACEMENT

A. In general, place concrete in accordance with ACI 301, and in the presence of the inspecting personnel required.

B. Ensure that anchors, seats, plates, and other items to be cast into concrete are placed, held securely, and will not cause hardship in placing concrete.

C. Maintain records of poured concrete. Record date, location, quantity, air temperatures, and test samples taken.

D. Ensure that reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.

E. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.

F. Pour concrete continuously between predetermined construction, control and expansion joints. Pour in a checkerboard pattern, unless otherwise directed.

G. Excessive honeycomb and embedded debris is not acceptable.

H. Conform to ACI 305 1-14 when concreting in hot weather.

I. Install vapor barrier in widest widths possible, under interior slabs on grade. Place at center of 4 inches of sand (minimum of 2 inches of sand top and bottom) lapping joints at least 18 inches and sealing joints, taping pipe penetrations.

J. Screed slabs and concrete bases level to a tolerance of 1/8-inch in 10 feet. Vary slab thickness as required to maintain top of slab elevation as design. Maintain top of slab elevation within ± 3/8” of intended elevation. Continually survey top of concrete elevations during concrete pour.

K. Inspect concrete surfaces immediately upon removal of forms. Patch imperfections.

L. Modify or replace concrete not conforming to required lines, details, shapes and elevations. Do not patch, fill, touch-up, repair, or replace exposed architectural concrete except upon express direction of Architect.

M. Provide smooth rubbed finish on concrete surfaces to be left exposed such as concrete walls, columns, beams, and joists, except as otherwise indicated.

N. Beginning immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete. Moisture cure for seven (7) days minimum all interior slabs.

O. Drypack shall be packed solid under baseplates and thoroughly packed under pressure treated mudsills, per Structural Details, so as to obtain a continuous bearing.

3.6 CONSTRUCTION JOINTS

A. Provide construction joints in slabs in accordance with ACI 318.

1. For slabs-on-grade, place control joints at 15 feet maximum on center in each direction, unless shown otherwise on Drawings.

B. The surface of horizontal construction joints shall be cleaned and roughened by removing the entire surface and exposing clean aggregate solidly embedded in mortar matrix, in accordance with the following procedure:

The contact surface shall be thoroughly cleaned by chipping or sand-blasting the entire surface not earlier than 5 days after initial pour, or by an approved method that will assure equal bond, such as a thorough hose-washing of the surface not less than two or more than four hours after the concrete is placed (depending on setting time), wash water and chalk-like material being entirely cleaned from the surface.

In the event that the contact surface becomes coated with earth, sawdust, etc. after being cleaned, the entire surface so coated shall be re-cleaned.

A mix containing the same proportion of sand and cement used in the concrete, plus a maximum of 50 percent of the coarse aggregate, shall be placed on horizontal joints before proceeding with the regular specified mix. A delay at least until the concrete in columns and walls is no longer plastic must occur before casting or erecting beams, girders, or slabs supported thereon. Beams, girders, brackets, column capitals, and haunches shall be considered as part of the floor system, and shall be placed monolithically therewith.

3.7 FIELD QUALITY CONTROL

A. Testing: Comply with CBC, 2019, Title 24, Part 2, Section 1903A.

B. If compressive strength tests of cylinder specimens fail to show strengths assumed in design, take 4 inch diameter cores at representative locations throughout structure as designated by Inspector. Take cores in accordance with ASTM C42. The strength level of the concrete shall be considered satisfactory if the average strengths of the area or panel equals or exceed the specified strength at 28 days, with no individual strength test of such area or panel less than 5 percent below that specified. Concrete that does not meet or exceed these criteria shall be removed by the contractor and replaced with concrete that conforms to these criteria. Remove and replace defective concrete at no additional cost to Owner. Be financially responsible for repair and replacement of other

in-place materials affected by such removal and replacement.

Costs of taking core samples and performing tests required will be paid by Owner if tests prove satisfactory. If test fail to show required strengths, concrete contractor will be held financially responsible.

C. If the strength of the molded test cylinder falls below the minimum ultimate compressive strength assumed in the design, adjust the proportions of the mix for the remaining portion of the structure to give concrete of the assumed minimum strength.

D. Concrete will also be deemed defective which is not formed properly as indicated, is not true to intended alignment, is not plumb or level where so intended, is not true to intended grades, has sawdust or other debris embedded within it, or does not fully conform to other provisions of these specifications. As directed, remove and replace with concrete complying with these specifications.

3.8 CONCRETE FINISHES

A. Slab Levels: Surfaces shall finish true to 1/8-inch in 10 feet on a straight-edge and in direction with maximum high and low variance occurring in not less than 20 feet and with 1/16-inch maximum tolerance in one running foot. Particular care shall be taken to finish troweling around the edges of the slabs so finish surface edges shall be at same elevations as the rest of the top surface of the slab. Slabs shall be surveyed continuously during pour.

B. Concrete Sealer: Concrete floors not indicated in the schedule to receive other finish shall receive two coats of sealer specified this section. Concrete to receive sealer shall be cured with specified concrete sealer that functions also as cure. Use the same material for each application.

C. Steel Trowel Finish: Interior slabs shall receive a monolithic steel trowel finish. Surfaces shall be screeded, wood floated, and steel-troweled. Finish shall be a smooth, hard, dense, impervious surface, free of defects. Finishers shall work from knee boards laid flat upon the surface. Mechanical troweling machines may be used if the desired finish and level tolerances can be obtained by their use, but finishing shall be by hand troweling.

1. Slabs to receive tile, carpet or adhered finishes shall receive light/medium broom finish to create "tooth" for adhesive.

2. Unfinished exposed to view slabs in service closets, mechanical, electrical, stairs, ramps, and similar spaces shall receive a medium/heavy broom finish. See Section 32 16 00 for site flatwork.

D. Depressed slabs shall be finished by tamping slab with an open grid tamper, screeding with a straightedge and wood floating to a true and uniform surface, true to tolerance of 1/4-inches in 10 feet.

3.9 CONCRETE CURING AND PROTECTION

A. General: At slabs that do not receive concrete sealer, per 2.01D, provide the following: Concrete Curing per Section 26.5.3, ACI 318. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Concrete shall be maintained above 50 degrees and continuously moist for not less than 7 days.

Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

B. Slab Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover during, and by combinations thereof, as herein specified. Provide Moisture-Curing by the following Methods:

1. Keep concrete surface continuously wet by covering with water. Continuous water-fog spray, for seven (7) days minimum.

2. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof type of adhesive. Immediately repair holes or tears during curing period using cover material and waterproof tape, for seven (7) days minimum.

3. Provide Curing and Sealing Compound to exterior slabs, walks, and curbs, as follows:

a. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Re-coat areas subjected to heavy rainfall within 3 hours after initial application.

b. Maintain continuity of coating and repair damage during curing period.

c. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, such as liquid floor hardener, waterproofing, damp proofing, membrane roofing, ceramic or quarry tile, vinyl composition tile (VCT), glue-down carpet, painting, and other coatings and finish materials, unless otherwise acceptable to Architect.

d. Cure formed concrete surfaces, including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

4. Curing Unformed Surfaces:

a. Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of moisture curing method.

b. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

5. Sealer and Dustproofer: Apply two (2) coats of specified curing and sealing compound to Interior slab surfaces not receiving any other finish.

6. Concrete (other than high-early-strength) shall be maintained above 50 degrees F. and in a moist condition for at least the first seven (7) days after placement, except when cured in accordance with Section 26.5.3, ACI 318.

3.10 PROTECTION

A. Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Exposed Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

1. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

2. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

3. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.

C. Concrete Surface Repairs: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly

higher than surrounding surface.

D. Repair of Formed Surfaces:

1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

2. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

E. Repair of Unformed Surfaces:

1. Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.

2. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01-inch wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

3. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

4. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect.

5. Site walls: Remove cracked, honeycombed or defective concrete as required by the Architect from joint to joint. Patching, calking, filling or repairing will not be permitted.

F. Repair Defective Areas:

1. Repair defective areas, except random cracks and single holes not exceeding 1 inch diameter, by cutting-out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance around.

2. Dampen concrete surfaces in contact with patching concrete and apply bonding

compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

3. Repair isolated random cracks and single holes not over 1 inch in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

4. Site walls: Remove cracked, honeycombed or defective concrete as required by the Architect from joint to joint. Patching, calking, filling or repairing will not be permitted

5. Perform structural repairs with prior approval of Architect of Structural Engineer for method and procedure, using specified epoxy adhesive and pressure grouting.

6. Repair method not specified above may be used, subject to acceptance of Architect.

G. Mitigation of Unacceptable High Moisture Emission Levels: Interior slabs-on-grade tested at levels in excess of 5.0 lbs/1000 s.f. shall be further evaluated with additional calcium chloride tests. Once levels are established, additional preparation measures shall be employed (depending on the magnitude of moisture levels) using one or both of the following products:

2 coats of Super-Krete
2 coats of Rust-Oleum 6000 system.

END OF SECTION

DIVISION 5

METALS

SECTION 051200

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Furnish and Installation of structural framing members, complete in place with required bracing, weld washers, nuts, shims, anchor bolts, and baseplates as indicated on the Drawings and specified herein.

B. Related Sections: Metal Fabrications; refer to Section 055000.

1.2 REFERENCE STANDARDS

A. Refer to the following for information regarding materials and installation methods necessary:

1. California Building Code (CBC) 2019, Chapters 22A and 35, as adopted by Title 24, and Chapter 7, Section 704 Fire-Resistance Ratings of Structural Members.

a. Refer to Drawings for details, design numbers, and ratings.

2. On-Site Welding Requirements, Sections 2204A, 1704A and 1705A, Title 24, Part 2, California Building Code, 2019.

3. American Society for Testing and Materials: Specifications A36, A123, A307, A370, A500, A501, A572 and A992.

4. American Institute of Steel Construction (AISC).

5. American Welding Society: AWS D1.1 and AWS D1.4

6. Steel Structures Painting Council (SSPC).

1.3 SUBMITTALS

A. Submit Shop and Erection Drawings Prior to Fabrication: Prepare erection drawings by State registered Structural Engineer. Show welded connections, lengths of welds, profiles, sizes, spacing and locations of members, attachments, anchorages, framed openings, size and type of fasteners, cambers and live loads. Contractor shall be responsible for reviewing and verifying all dimensions on shop Drawings.

1. Splices and Deviations: Splices will be permitted only where and as shown on Drawings. Deviations from design drawings desired or required by fabricator are to be indicated on shop drawings by providing a heavy line around the feature on which deviation approval is being requested, showing complete detail and describing deviation proposed. Provide detail with a note specifically requesting

approval of deviation by fabricator. Deviations or changes shall not be made without the approval of the Division of the State Architect, as a Change Order.

a. Refer to Section 013300 – Submittal Procedures, Paragraph 3.4 A.2. (Revisions) Cost of such changes shall be borne by the Contractor.

B. Erection and Bracing Plan and Procedure: Refer to Section 2205A, Title 24, Part 2, California Building Code. Employ a California State licensed Structural Engineer to prepare erection and bracing plan and erection procedure for structural steel including columns, beams, and girders, who will be responsible for compliance. Follow plan and procedure exactly. Maintain a copy at project site. Pay for costs involved.

C. Scrap collection and recycling plan: Contractor shall prepare and submit a scrap collection and recycling plan for all miscellaneous and structural steel.

1.4 QUALITY ASSURANCE

A. Tests and Inspections: Testing for steel shall be done in accordance with Title 24, Part 2, Section 1705A.2. Inspection shall be in accordance with Title 24, Part 2, Section Table 1705A.2.1.

B. If structural steel can be identified by heat or melt numbers and is accompanied by mill analysis and test reports (identified stock shall not be tested), testing shall be in accordance with Title 24, Part 2, Section 2203A.1

C. If structural steel cannot be identified or its source is questionable, make not less than one tension and one bend test for each 5 tons or fraction thereof. Also, it shall be tested to meet minimum chemical and mechanical requirements of the ASTM standard appropriate for the steel specified for the structure.

D. Furnish test specimens from steel fabricator and take them under the direction of the Testing Agency. Machine each test specimen by Testing Agency to dimensions required by ASTM A370.

E. Have testing agency pick up test specimens and make required tests.

F. Costs of tests of identified stock will be paid for by Owner, unless tests fail to comply with the specifications, in which case the Owner will pay for testing, but back charge the Contractor. Costs of tests for unidentified stock will be paid for by the contractor.

G. Complete a 4-sided inspection of steel. Such inspection shall be paid for by the Owner. The Inspector of structural steel which is not fabricated within 25 miles of the project site, shall also be paid for by the Owner, but the Contractor shall pay for travel expenses.

H. After fabrication and inspection, costs associated with re-inspection of defective or replaced materials shall be paid for by the Owner, but backcharged to the Contractor.

I. Provide labor, equipment and facilities necessary for moving and handling materials to be inspected.

J. Provide and pay for supervision by a registered Inspector of welding operations of frames with joints, including inspection for quality, penetration, and conformity of Drawings, and a report verifying that welding is adequate and was done in conformity of project requirements.

1. Visually inspect welds, and have inspector present to approve welding and high strength bolting whether performed in fabricator's shop or at project site, and inspect erection. Ensure testing laboratory compliance with regulations of the Division of the State Architect and certify in writing, upon completion of work, that welding and high strength bolting has been performed in accordance with Drawings and these Specifications. Inspect grouting of column base plates.

2. ~~Have testing laboratory check bolt tightness on not less than 10 percent of bolts selected at random in each high strength bolt connection. Follow procedures of ASTM A325 and A490.~~

3. Inspect all complete penetration welds and partial penetration welds by ultrasonic or other approved nondestructive tests. Inspect first pass of multi-pass welds and groove welds.

4. Perform ultrasonic testing by specially trained, qualified technicians who operate equipment, examine welds and maintain a record of welds examined, defects found and disposition of each defect. Repair defective welds and retest.

5. Ultrasonically test welds at rate of 100 percent to establish welder qualifications. If rejectable defect rate is less than 5 percent, frequency may be reduced to 25 percent. If rate increases above 5 percent, continue 100 percent testing until rejectable defect rate again drops below 5 percent. Calculate percentages by individual welder.

6. Submit all preliminary, working and final documents required by subsection 1.04K.

7. Inspect all seam welds at HSS steel member.

K. Comply with California Building Code (CBC) Title 24, Part 2, Sections 2213A and 1705A.2.

L. Results of tests, together with identified copies of the Mill Analysis and inspection reports shall be submitted to the Division of the State Architect, and to the Architect and Structural Engineer. Arrange for continuous inspection of Shop and field welding in accordance with Title 24, Part 2 Section 1705A.2.2.1 and Table 1705A.2.

1.5 PROJECT CONDITIONS

A. Verify measurements, lines, grades, locations and details at project site. Conform to existing field conditions.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. Structural Steel Members: Shall conform to the requirements of ASTM A6, add the following sentence "and shall be fabricated according to AISC Practice and Specifications for Building."

B. Structural plates, bars, etc., shall conform to ASTM A36 and ASTM A572. Structural wide flange beams and columns shall conform to ASTM A992, Grade 50.

C. Pipe columns shall conform to ASTM A53, Grade B

D. Tube members shall conform to ASTM A500, Grade B.

E. All welding shall be done using the shielded electric arc process by AWS certified welders using AWS A5.1, E70XX electrodes.

F. All welds used in primary members and connections in the lateral force systems shall be made with a filler metal that has a minimum Charpy V-notch toughness of 20 ft.-lbs. at minus 20 degrees F., as determined by AWS classification.

G. Continuous inspection is required for all field and shop welding by an Inspector approved by the Division of the State Architect.

H. Bolts shall conform to ASTM A307, unless noted otherwise.

I. Structural Steel Shop Drawings shall be reviewed by the Structural Engineer prior to fabrication.

J. Light gauge steel members shall conform to ASTM A653, Grade A.

K. Recycled Content – Provide products with an average recycled content of steel so postconsumer recycled content plus one-half of postconsumer content is not less than 50%

2.2 LIGHT STRUCTURAL STEEL

A. Standard specifications for Hot-Formed Welded and seamless Carbon Steel Structural Tubing, ASTM A500 Grade B.

2.3 WELDING ELECTRODES

A. Conform to AWS, D1.1/D1.1M-15.

1. Required strength of weld shall comply with CBC Title 24, Part 2, Sections 2212A.2.3 and 2213A.

2.4 GALVANIZING

Galvanize all structural steel exposed to weather, unless otherwise noted on plans.

A. Provide hot-dip galvanizing in accordance with ASTM A123, Grade 90.

B. Field Galvanizing: Provide ZRC, or other approved.

2.5 PRIMER

A. Exterior Primer - Provide Tnemec Series 10, a zinc-chromate, or other approved. Primer shall have a VOC content of 100 g/l (0.83 lb/gal) or less when calculated according to 40 CRF 59, Subpart D (EPA method 24).

B. Interior Primer – Provide interior primer 734149X red oxide by Rodda Paint Co., or equal. Primer shall have a VOC content of 100 g/l (0.83 lb/gal) or less when calculated according to 40 CRF 59, Subpart D (EPA method 24).

C. Clean, prepare and shop prime exterior members in accordance with SSPC-Paint 20 or SSPC-Paint 29 and compatible with top coats indicated on plans. Do not prime specific surfaces to be welded or which will be in direct contact with concrete or other cementitious materials.

D. Clean, prepare and shop prime interior members in accordance with SSPC-Paint 23 and compatible with top coats indicated on plans. Do not prime specific surfaces to be welded or which will be in direct contact with concrete or other cementitious materials.

2.6 WELDED STUDS

A. All welded studs shall be Nelson shear connector studs (ICC ESR-2856) or equal.

B. See Drawings for welded stud locations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Surface Conditions: Prior to commencing work of this section, inspect the work of others and verify that such work has been properly completed and installed to allow for proper installation of materials and methods required of this section.

3.2 FABRICATION AND ERECTION

A. Fabricate and assemble work by skilled workers using sizes and weights shown. Connections are to develop at least strengths shown, unless approved otherwise beforehand. Allow no splices except where shown.

1. Ultrasonic material inspection - ultrasonically test column materials thicker that 1-1/2 inch for laminations within 1 foot (6 inches either side) of a direct groove

weld from girder flange connections and column splices.

B. Drilling, Punching and Reaming: Hole burning to make or enlarge previous holes is not allowed. Prepare required holes in structural steel members for attachment or passage of work of other trades. Where allowed, steel may be punched 1/16-inch larger than the nominal diameter of the bolt when thickness of the steel is equal to or less than the diameter of the bolt plus 1/8-inch. Where the steel is thicker than the diameter of the bolt plus 1/8-inch, the holes must be drilled or sub-punched and reamed. Diameter of the sub-punched holes, and the drill for sub-drilled holes, is to be 1/16-inch smaller than the nominal diameter of bolt to be installed. Precisely locate finished holes to ensure passage of bolts through steel assemblies without drifting. Enlarge holes only by reaming. Poor matching of holes is cause for rejection of work.

C. Welding: Comply with the requirements of Title 24, Part 2, Sections 1705A.2 and 2204A.1. Perform welding by the electric shielded arc process. Cut out defective welds with a chisel. Clamp or hold materials securely in position for welding. Upon completion, remove slag and clean welds for inspections and painting. Groove and multi-pass welds are required to be continuously inspected.

1. Storage and Care of Electrodes: Ensure that coatings of low hydrogen type electrodes are thoroughly dry when used. Use electrodes taken from hermetically sealed packages within four hours of the time the package is opened. Electrodes not used within this time period, and electrodes which have been exposed more than one hour to air having a relative humidity of 75 percent or greater, are to be dried for at least two (2) hours at 200 to 250 degrees F. before used, or are to be reconditioned according to manufacturer's printed recommendations. Electrodes dried or reconditioned, which are not used within four hours after drying is completed, are to be re-dried before use. Electrodes of any classifications that have been wet are not to be used under any conditions.

2. Preparation: Clean surfaces to be welded of paint, grease, scale, and foreign matter. Clean welds each time electrode is changed. Chip entire area of hand guided and controlled flame cut edges before welds are deposited. In general, surfaces made by automatic or mechanically guided and controlled equipment need not be ground or chipped before welded.

3. Procedures: During assembling and welding, hold components of a built-up member with sufficient clamps or other adequate means to keep parts straight and in close contact. Do no welding in wind until adequate protective screening has been set up.

4. Characteristics of Welds: After being deposited, brush welds and ensure they exhibit uniform section, smoothness of weld metal, feather edges without undercuts or overlays, and freedom from porosity and clinkers. Ensure through visual inspection at edges and ends of fillet welds there is good fusion and penetration into base metal.

D. Bolting:

1. Common Bolts: Make connections with common bolts only where indicated.

2. ~~High Strength Steel Bolting: Where structural joints are made using high strength bolts, load indicator washers, and nuts tightened to a high tension, the materials, method of installation and tension control, types of wrenches to be used, and inspection methods are to conform to specifications for structural jointing using ASTM A325 or A490 bolts established by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation and the following requirements:~~

   a. ~~Provide high strength bolts with a suitable identifying mark placed on top of the head before leaving factory.~~

   b. ~~Do tightening of nuts with properly calibrated wrenches, load indicator washers, or turn of nut method; the minimum bolt tension for the size of bolt used is to be in accordance with tables listed in the above standards.~~

   c. ~~Check calibrated wrenches individually for accuracy at least twice daily for actual conditions of application.~~

   d. ~~Mark bolts that have been completely tightened with identifying symbol.~~

   e. ~~Install load indicator washers in accordance with AISC specifications and Contract Drawings.~~

   f. ~~Ensure that contact bearing surfaces and threads of bolted parts are free of scale, slag, and burrs which could prevent solid seating of parts.~~

   g. ~~Bolt lengths are to be grip plus 1-1/4 inch.~~

   h. ~~At moment connections perform welding prior to high-strength bolt tightening~~.

3. Load Indicator Washers: Provide as manufactured/ licensed by Cooper and Turner. They may be used for field installation of high-strength bolts. These washers may not be substituted for any required washer, but may be used in conjunction with required washers. Tightening is to be in accordance with these specifications using high strength bolts. After sufficient bolts in a joint are snugged to draw the members into close contact, tightening should progress from the most rigid part to the free edges until the load indicators on bolts are closed to the required gap of 0.015 inches under bolt heads or 0.010 inches under the nuts. To prevent overtightening and damage to the bolts, do not completely close the gap.

4. Tension Set Bolts, Nuts, and Washers: May be used for field installation of high strength bolts. In multi-bolt joints, tighten nuts in stages, a little at a time, without breaking the spline in any one of them until the final stage, to minimize slackening of the installed bolts.

5. Inspection of high strength bolting shall comply with Title 24, Part 2, Sections 2213A.1 and 1705A.2.

6. Erector to touch-up all welds and bolts after inspection.

E. Erection:

1. Erect structural steel by professional riggers, using proper hoists and equipment, carefully planned and laid out so that cutting shall not be necessary. Erect the work plumb, square and true to line. Provide temporary bracing and guys where necessary to provide for loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation, and leave in place as long as necessary to safeguard parts of the work.

2. Temporary Connections: Securely bolt work to maintain the steel in proper position while bolting and welding is being performed. Align, plumb and level work prior to welding and final bolting.

3. Set column base plates in exact position as to alignment, level and elevation and support on steel wedges or equivalent until grout has properly set. Center of each base is to be true to the column center within 1/16-inch and adjusted to its elevation to 1/32-inch. Exactly level plates on both axes.

4. Sequence: Carry out the erection of steel in the proper sequence with the work of others. Frame, bed and anchor to concrete and related work in accordance with detailed drawings and setting diagrams.

5. Erection Tolerance: Follow AISC except as follows:

   a. Vertical dimensions measured from top of beams at their connections at any one column, not varying more than 1/4-inch plus or minus per story or, when accumulative from floor to floor, not exceeding 3/8-inch per story exclusive of column shortening due to dead load.

   b. Floor level is considered level if floor framing members on any one floor measured from top of column connections do not vary by more than 1-1/2 inch plus or minus.

   c. Plumb displacement center line of columns from established column line, no more than 1 inch toward or away from established center line.

   d. Horizontal dimension variances governed by column displacement.

6. Perform erection with suitable equipment, of adequate capacity and design with due regard for personnel and public safety and as not to deflect or stress members

beyond reasonable limits. Maintain erection and temporary bracing plan at project site in accordance with Title 8, California Code of Regulations.

7. Damaged members during erection: Straighten or replace members which are bent, twisted or damaged as directed. If heating is required in straightening, perform heating by methods which ensure uniform temperatures throughout entire member. When directed, remove members which are damaged to an extent impairing their appearance, strength or serviceability and replace with new members at no additional cost to Owner.

8. Anchor Bolts: Provide with setting drawings and instructions. Verify position of bolts prior to delivery of steel; report errors or deviations for adjustment.

F. Erection Bracing: Provide erection bracing immediately upon erection of members and leave in place until members are braced by balance of building.

3.3 PROTECTION

A. Protection of Floors and Temporary Flooring:

1. Exercise caution to protect floor surfaces and adjacent work from damages. Do not overload floors. Provide only pneumatic mobile equipment with tires, for moving steel. Do not place steel members directly on concrete floors. Pads, timbers, or other materials for cushioning shall be used.

2. Provide necessary planking, scaffolding and temporary flooring in connection with erection of steel or support of erection machinery as part of the work. Conform use of temporary floors or steel deck to governing codes and regulations.

3. Temporarily tack weld steel deck to supports where used as a working platform. Distribute concentrated loads from welding machines or other heavy machinery by planking or other equivalent means. Replace steel deck damaged in using as working platform at no additional cost to Owner.

3.4 CLEANING

A. Shop Priming:

1. Clean surfaces according to SSPC and AISC recommendations, and apply specified primer to minimum 1.0 dry mil thickness. Ensure that primer is worked into joints.

2. Steel to be embedded into cementitious materials, permanently concealed steel surfaces, contact surfaces of high-strength bolted connections, and surfaces to receive fireproofing are not to be primed.

END OF SECTION

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   2. Miscellaneous framing supports.
   3. Miscellaneous steel trim.

B. Related Sections include the following:
   1. Division 9 Section “Painting” for field painting.

1.3 DEFINITIONS

A. Exterior: Defined as the following:
   1. Areas, locations, and surfaces that are unprotected, or exposed to environmental elements.
   2. Areas, locations and surfaces within uncontrolled environments.
   3. Areas, locations and surfaces of unconditioned spaces, including belowgrade/underground, partially-exposed, or “covered” parking areas.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.5 SUBMITTALS

A. Product Data: For items specified.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.

1.6 QUALITY ASSURANCE

A. Treads, Risers, and Nosings: CBC Section 11B-504.
   1. Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast.
   2. The stripe providing clear visual contrast shall be a minimum of 2” wide to a maximum of 4” wide placed parallel to, and not more than 1” from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.
   3. The radius of curvature at the leading edge of the tread shall be no greater than ½”. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. The maximum angle for a riser to slope under the tread shall be 30 degrees from vertical. Nosings shall extend 1-1/4" maximum over the tread below.
   4. Treads shall be 11” deep minimum. Risers shall be 7” high maximum and 4” high minimum. All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Open risers are not permitted.

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal fabrications that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Provide products with average recycled content of steel products such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

D. Steel Tubing: ASTM A 500, cold-formed steel tubing.

E. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

F. Slotted Channel Framing: Cold-formed metal channels with continuous slot complying with MFMA-3.
   1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated.
   2. Material: Galvanized steel complying with ASTM A 653, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36.
   1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.
   1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Surface Preparation: SSPC-SP2 Hand Tool Clean and /or SSPC-SP3 Power Tool Clean.

D. Organic Zinc-Rich Primer: Complying with SSPC-Paint 20 and compatible with topcoat, and meets AISC slip coefficient as a Class B Coating.
   1. Surface Preparation: SSPC-SP6 Commercial Blast Clean.
   2. Products:
      a. Tnemec Company, Inc.; Tneme-Zinc 90-97, 2.5 to 3.5 mils DFT (Basis of Design)
      b. Other manufacturers listed in Division 9 Section "High Performance Coatings".
      c. Or equal.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
   1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as indicated. Drill bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Galvanize miscellaneous framing and supports where indicated.

E. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.8 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

C. Field painted exterior miscellaneous steel trim and interior miscellaneous steel trim, where indicated.

2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

D. Field Finish: Comply with Division 9 Section “Painting” for field painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for sectional doors securely to and rigidly brace from building structure.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

DIVISION 6
WOOD AND PLASTICS

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Wood framing, miscellaneous furring for wall finishes, miscellaneous blocking and rough hardware.

B. Related Sections:

1. Finish Hardware, see Section 087100 – Door Hardware.
2. Millwork and other finish carpentry.

1.2 REFERENCE STANDARDS

A. Softwood Lumber: PS 20 - American Softwood Lumber Standard.

B. NFPA - National Forest Products Association, National Design Specifications for Stress Grade Lumber and its Fastening.

C. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

D. Chapter 23, Part 2, Section 2303, Title 24, California Building Code, 2019.

E. Chapters 7, 23 and 35, California Building Code, 2019.

F. Plywood: U.S. Product Standard PS 1-09.

G. Lumber: U.S. Product Standard, PS 20-10.

1.3 QUALITY ASSURANCE

A. Provide lumber with visible grade stamp of an approved agency certified by NFPA.

1.4 DELIVERY, STORING AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up, off ground surface.

B. Identify framing lumber by grades and store grades separately from each other.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading lumber to prevent damages, splitting and breaking.

E. Seasoning:

F. Deliver materials at earliest date possible to allow maximum; drying time on site.

G. Pile and strip lumber at site to allow free circulation of air with pile protected from sun and moisture.

H. Air-season lumber for at least 60 days before covering with finish materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber: PS 20 and WCLIB Standard Number 17; Douglas Fir/Larch; graded in accordance with NFPA Grading Rules; maximum moisture content of 19 percent, grades as scheduled on drawings.

1. Douglas fir shall bear WCLIB grade stamp.

2. Pressure treated Douglas fir shall be No. 2 minimum and bear the AWPA quality mark. Cuts and holes shall be treated per AWPA Standard U1 (statements such as "or to refusal" are not permitted).

3. Comply with provisions of Title 24, CBC, 2019, Part 2, Section 2303.

B. Plywood:

1. Plywood for Roofs, Walls, and Floor Sheathing: PS 1-09 Structural I grade, APA C-D, exterior glue, except B-D for electrical and telephone panels.

2. Comply with CBC, 2019, Section 2303.

3. Roof and shearwall plywood shall be nominally 4 ft. x 8ft. in size. Do not use sheets less than 8 square feet, nor less than dimensions noted in paragraph 3.08 Plywood Placement.

2.2 ACCESSORY MATERIALS

A. Nails, Spikes, and Staples: Common (with standard lengths), except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Steel Hardware and Stock Framing Products by Connectors: ASTM A36 steel, galvanized for exterior applications, Simpson Strong-Tie Company. Products by KC Metal Products, or other approved manufacturer, may be substituted if equal. Comply with CBC, 2019, Title 24, Part 2, Chapter 23.

C. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

D. Wood Preservative: Wolmanizing treatment at least two weeks prior to delivery to site. Treatment shall meet or exceed AWPA P5.

E. Machine Bolts: ASTM A307.

F. Pressure Treatment: Sills and plates in contact with concrete or masonry within 48 inches of the ground, and wood posts and columns bearing directly on concrete shall be water-borne preservative pressure treated in accordance with paragraph, CBC 2019, Title 24, Part 2, Chapter 23.

1. At cuts, holes, notches and other field operations which expose a surface not factory treated with preservative, field apply preservative material compatible with original material shall bear mark AWPA Standard U1.

2. Meet local Air Quality Control Board Standards for field applied preservative treatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Selection of Lumber: Carefully select members. Ensure that exposed members are free of heart center. Select members so that knots and obvious defects will not interfere with placement of bolts, proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

B. Cut out and discard defects which will render a piece unable to serve its intended function. Lumber may be rejected by Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.

3.2 GENERAL FRAMING

A. In addition to framing operations normal to fabrication and erection indicated on drawings, install wood backing required for work of other trades, and for casework, chalkboards, toilet partitions and etc. as required. Wood backing to be installed in high traffic and high impact areas.

B. Set horizontal and sloped members with crown up.

C. Non-bearing stud walls, sills, and trimmers may be anchored to concrete per Structural Drawings.

D. Wall and partition studs and mullions shall be continuous from sill to plates. Run at least two studs on each side of openings in stud walls for openings in exterior walls and in

partition openings larger than 5 feet, and partitions from sill to plate. In addition, place one stud trimmer to support each end of lintels over openings, unless shown otherwise.

E. Provide double plates with joints staggered and lapping at least four feet, and splice. Nail as required on Drawings.

F. Install nailing blocks and backing necessary for attachment of grounds, finishes, trim, fixtures, and do required cutting, furring, and backing for plumbing and heating pipes, fixtures, etc., as detailed in the Drawings or approved by the Structural Engineer and approved by the Division of the State Architect, Office of Regulations Services.

G. Frame stud partitions, furring and walls containing fire extinguisher cabinets, electric panels, plumbing, heating, or other pipes to give proper clearance. Cutting of studs in bearing partitions and shear walls is prohibited unless specifically detailed.

H. Do not place pipes exceeding 1/3 of plate width in partitions used as bearing or plywood-sheathed walls, but place them in furring completely clear of studs, unless detailed otherwise. Place approved piping in center of plates using neat hole. No notching is allowed. In no case allow pipes to pass through plates less than 5-1/2 inches wide.

I. Unless otherwise indicated provide 2 inch by 6 inch studs at 16-inches on centers. Refer to Structural Drawings for Simpson Metal Strap Ties, strap length, nail size and nail spacing where plates are broken.

J. Provide cross-bridging at 10 feet on centers maximum for all joists and rafters more than 10-inches deep. Use wood 2 inch by full depth of joist or rafter or approved metal type bridging. Nail metal bridging.

K. Provide isolated posts with connections at top and bottom; Simpson CC caps or CB base unless specifically detailed otherwise.

L. Double joists under parallel partitions with solid blocking between joists over points of support.

M. Provide a Simpson "CB" Steel Base Plate for untreated wood posts where they are or will be in contact with concrete.

N. Framing for horizontal plaster assemblies shall comply with the requirements of CBC 2019, Title 24, Part 2, Section 2507.

3.3 FIRE BLOCKING

A. Fire blocking shall conform with the requirements of CBC 2019, Title 24, Part 2, Chapter 7, Section 713.

B. Ensure that no fire stop is less than nominal 2 inches thick and no less in width than enclosed space within partition.

C. Provide stud wall and partitions with continuous rows of bridging or fire stops which will form a complete and effective separation in entire width of partitions, placed in such a manner that there will be no concealed air spaces greater than 8 feet in vertical dimension. Intermediate stops may be in line with opening headers. Provide furred space between stud walls and partitions with continuous fire stops at same elevation as those in the enclosing walls which must be installed horizontally, thus forming a solid stop from outside to outside of studs. At concealed draft passages or shafts including furring spaces, ensure that maximum dimension is no more than 8 feet. Provide fire stop partitions at suspended ceilings.

3.4 BEARINGS

A. Make bearings full unless shown otherwise.

B. Finish bearing surfaces on which structural members are to rest so as to give sure and even support. Where framing members slope, cut or notch ends as required to give uniform bearing surface.

3.5 SHIMMING

A. Do not shim framing member except where specifically shown or required by drawings.

3.6 BLOCKING

A. Install blocking required to support items of finish and to cut off concealed draft openings, both vertical and horizontal, between ceiling and floor.

3.7 ALIGNMENT

A. On framing members to receive a finished surface, align finish sub-surface to vary not more than 1/8-inch from plane of surface of adjacent framing and furring members.

3.8 PLYWOOD PLACEMENT

A. All installed plywood shall be in 4' x 8' sheets except where restricted by boundaries or changes.

B. Minimum Plywood Panel Sizes shall be as follows:

1. In horizontal plywood diaphragms, no panel less than 24 inches wide or 48 inches long shall be used.

2. In vertical plywood diaphragms, no panel less than 16 inches wide shall be used.

C. Center joints accurately over support unless otherwise shown on Drawings. Provide gapping of plywood substrate of 1/8-inch at abutting joints at all wall.

D. Protect plywood from moisture until succeeding component or materials are installed to cover plywood. Delaminating plywood shall be removed and replaced.

3.9 FASTENING

A. Use only common wire nails or spikes of standard lengths and gages as specified Table 2304.10.1, of the California Building Code, 2019.

B. For conditions not covered on drawings, Contractor to request clarification or provide penetration into piece receiving point not less than 1/2 length of the nail or spike, provided that 16d nails may be used to connect two pieces of nominal 2 inch thickness as specified by the Architect, and/or Structural Engineer and approved by the Division of the State Architect.

C. For bolts, drill holes 1/32-inch to 1/16-inch larger in diameter than bolts being used. Drill straight and true from one side only.

D. Bolt threads shall not bear on wood. Use washers under head and nut where both bear on wood. Use washers under nuts.

E. For lag-screws, and wood screws, pre-bore holes in accordance with CBC 2019, Title 24, Part 2, Chapter 23.

F. Screw, do not drive, lag screws and wood screws.

G. Nailing schedule shall be per CBC 2019, Title 24, Part 2, Chapter 23.

3.10 HOLLOW METAL FRAME GROUTING

A. At all exterior hollow metal jambs, drypack/grout the bottom 6-inch space between the hollow metal and 6-inch concrete curb at the wall. The intent is to fill solid the void between the frame and concrete curb. Install drypack/grout before any finishes are applied to the studs.

END OF SECTION

SECTION 062000

FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Handrails, chair-rails, trim, and soffits.

B. Related Sections:

1. Rough Carpentry; refer to Section 06 10 00.
2. Specialties; refer to Division 10.

1.2 REFERENCE STANDARDS

A. Woodwork Institute, 2nd Edition, 2014 Architectural Woodwork Standards, has recommendations for materials, construction, and installation procedures.

B. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

1.3 QUALITY ASSURANCE

A. Provide millwork fabricated in accordance with recommendations of Woodwork Institute. Fabricated millwork shall be certified and grades stamped with Woodwork Institute certification.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up off ground surface.

B. Do not store millwork outside. Do not deliver millwork to project until spaces or other surfaces to receive it are prepared.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading items to prevent damages, chips, splitting and breaking.

1.5 PROJECT CONDITIONS

A. Seasoning:

1. Deliver materials at earliest date possible to allow maximum drying time on site.

2. Air-season lumber for at least 60 days near job site before covering with finish materials.

1.6 SUBMITTALS

A. Provide manufacturer's standard color samples of plastic laminate (where applicable) and hardwood veneers for color and grain selection.

B. Provide Woodwork Institute Certified Compliance Certificates for millwork items, certifying that products fully comply with requirements of the grades specified.

C. Prepare Shop Drawings in accordance with Section 1 of the WI Standards referenced. Include the Woodwork Institute Certified Compliance label on the first page of each set of Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Finish Lumber: Graded in accordance with Western Wood Products Association Grading Rules; maximum moisture content of 15 percent.

ITEM	SPECIES	GRADE
Misc. Trim	Red Oak, rift cut	Custom
1 x 4 tongue and groove siding	Redwood	Grade A, square edge, random length.

2.2 ACCESSORIES

A. Nails, Spikes, and Staples: Common, except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

C. Machine Bolts: ASTM A307

D. Wood Preservative: Wolmanizing treatment at least two-weeks prior to delivery to site.

2.3 FABRICATION

A. Manufacture, mill, fabricate, assemble and finish millwork by skilled mechanics, using approved standard methods of manufacture and workmanship. Workmanship shall conform to the Custom Grade requirements of Woodwork Institute Manual referenced.

B. Conceal means of fastening where other than glue joinery is employed. Use fine casing nails, carefully set without hammer marks.

C. Level tops of counters and cabinetry to a tolerance of 1/32-inch in 4 feet in direction.

PART 3 - EXECUTION

3.1 PREPARATION

A. Selection of Lumber: Carefully select members so that defects will not interfere with proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

3.2 INSTALLATION

A. Installation of finish carpentry and millwork shall be in accordance with the applicable recommendations of the Woodwork Institute Manual, current edition, Architectural Woodwork Standards.

B. Install building specialty items specified under other sections which are not specified to be installed by specialty product manufacturer or supplier.

END OF SECTION

SECTION 064100 - PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes wood paneling.

1.3 SUBMITTALS

A. Product Data.

B. Shop drawings.

C. Visual samples: Submit two (minimum 4” x 6”) samples indicating color and texture to be expected in finished work.

D. Maintenance data: Give instructions for general maintenance and repair of surfaces and finishes.

1.4 QUALITY ASSURANCE

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 3 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paneling:
   1. Stikwood. (Basis of Design)
   2. Or equal.

2.2 WOOD PANELING

A. Product: Reclaimed Weathered Wood by Stikwood or equal.
   1. Description: Lightweight, real wood plank with a peel+stik adhesive tapeback.
   2. Common Name: American Eastern White Pine.
   3. Scientific Name: Pinus Strobus L.
   4. Grade: Recycled Original Weathered Patina Texture.
   5. Finish: Unfinished.
   6. Flame Spread Rating: (ASTME 84): Class A Treatment Option.
   7. Standard Milling: Flush Cut, No Tongue And Groove, Butt Joint.
   8. Installation: Peel and Stick.
   9. Certifications: Fsc® Recycled 100%, Indoor Advantage™ Gold.
   10. Indoor Air Quality Certified To Scs-Ec10.3-2014 V4.0.
   11. Typical Dimensions:
      a. Thickness: 5/32″.
      b. Width: 5″.
      c. Length(S): Random 12″–48″.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Panels are subject to the effects of humidity and temperature. Do not use in high humidity areas.

B. Open cartons and carefully inspect all panels.

3.2 INSTALLATION

A. Install all materials in strict accordance with the manufacturer’s installation instructions.

B. Avoid contamination of the panel faces with adhesives, solvents or cleaners during installation.

3.3 CLEANING

A. Clean panels, trim and hardware according to the manufacturer’s recommendations.

END OF SECTION 064100

SECTION 068200 - FIBER REINFORCED PLASTIC PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Fiber reinforced plastic panel system for adhesive mounting.
   2. Moldings, adhesive, and joint sealants.

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

C. Maintenance Instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of fiber reinforce plastic panels that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fiber Reinforced Plastic Panels: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Marlite. (Basis of Design)
   2. Formica. (Basis of Design)
   3. Nudo.
   4. Crane Composites (formerly Kemlite).
   5. Glasteel.
   6. Or equal.

2.2 PANEL SYSTEM

A. Plastic Panel System: Factory finished panels, trim, sealant, and accessories.

B. Product: Standard FRP by Marlite or equal.
   1. Fiberglass reinforced polyester, USDA approved for incidental food contact.
   2. Surface Burning Characteristics: Flame spread index of 200 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84 (Class C/III).
   3. Thickness: 3/32 inch, nominal.
   4. Width: 48 inches.
   5. Height: 96 inches.
   6. Flexural Strength: 17,000 psi, when tested in accordance with ASTM D 790.
   7. Flexural Modulus: 600,000 psi, when tested in accordance with ASTM D 790.
   8. Tensile Strength: 8,000 psi, when tested in accordance with ASTM D 638.
   9. Tensile Modulus: 9,430 psi, when tested in accordance with ASTM D 638.
   10. Barcol Hardness: 40, when tested in accordance with ASTM D 2583.
   11. Impact Resistance: 7 ft-lb/in, when tested in accordance with ASTM D 256, Izod method.
   12. Coefficient of Thermal Expansion: 0.0000157 in/in/degree F, measured in accordance with ASTM D 696.
   13. Water Absorption: 0.17 percent, when tested in accordance with ASTM D 570.
   14. Specific Gravity: 1.53, when tested in accordance with ASTM D 792.
   15. Front Finish: As indicated on Drawings.
      a. Color: As indicated on Drawings.

C. Product: HardStop Decorative Protection Panels by Formica or equal.
   1. Panel Core Material: Treated fiberglass core.
   2. Laminate Grade:
      a. Grade H1, 0.0677 Inches - 0.0827 Inches.
   3. Tested Data:
      a. ANSI / NEMA LD-3: High Pressure Decorative Laminates.
      b. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials. Class 1/A Fire-rated (UL723/ASTM E-84).
         1) Flame-Spread Index: 25 or less.
         2) Smoke-Developed Index: 450 or less.

c. GreenGuard Gold Indoor Air Quality Certified®.
d. SEFA 8.1 approved.
e. ASTM G 22 Bacterial Growth Resistance.

4. Laminate Finish: As indicated on Drawings.
5. Laminate Color(s): As indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Take panels out of cartons and allow to acclimatize to room conditions for at least 48 hours prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Clean surfaces thoroughly prior to installation.

D. Protect existing surfaces from damage due to installation.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use the adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.

C. Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch expansion space.

D. Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.

E. Protect installed products until completion of project.

F. Touch-up, repair or replace damaged products after Substantial Completion.

END OF SECTION 068200

DIVISION 7

THERMAL AND MOISTURE PROTECTION

SECTION 071909 - CONCRETE MOISTURE AND ALKALINITY TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for independent testing and inspection requirements for concrete moisture and alkalinity.

B. Related Sections include the following:
   1. Division 7 Section "Concrete Moisture and Alkalinity Barrier" for concrete sealers to reduce moisture and alkalinity level when testing fails.

1.3 SUBMITTALS

A. Independent testing agency qualifications: Past 4 year history of testing of comparable project size and scope.

B. Product data: Moisture test kit.

C. Testing Results: Provide interior temperature, humidity, moisture vapor and alkalinity results for testing period.
   1. Alkalinity and Adhesion Test Report.
   2. Moisture Test Report.

D. Locations Map: Provide each testing result documented on a locations map. Map may be finish floor plan by Architect or similar representation.

E. Record Submittals: Testing reports and locations map.

1.4 SCHEDULING

A. Site Meeting: Testing Agency, Owner, Architect and Contractor shall meet 30 days prior to flooring installation to discuss testing requirements, specifications and locations prior to testing.

PART 2 - PRODUCTS

2.1 MOISTURE TESTING

A. Test Method: ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
   1. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride is NOT acceptable method.

B. The In-Situ Method:
   1. In-situ probes deepen concrete moisture measurement. For decades, builders used (and some still do) the anhydrous calcium chloride test for concrete moisture vapor emissions rate (MVER). The MVER is defined as the rate of water vapor emissions from the surface of concrete and is determined with the use of a desiccant material sealed to the slab surface for a specified time period, then measured. It has been believed that the change in the desiccant weight could be translated into a moisture ratio for the concrete beneath.
   2. In-situ concrete moisture testing places sensors, or probes, inside the slab itself. As concrete dries, moisture migrates from the bottom of the slab to the surface where it can evaporate away. Logically then, moisture levels at the bottom of a slab will read higher from those at the surface. In-situ probes provide relative humidity (RH) measurements at 40% of the slab's depth*, a position proven to more accurately portray the final RH levels of the slab if it were to be sealed at that point in time and the slab moisture allowed to fully equilibrate.

C. Acceptable Testing Devices for ASTM F2170 Test:
   1. Wagner Meters Rapid RH® system by Wagner.
   2. Protimeter by T Equipment.
   3. Relative Humidity Meter system by American Moisture Test.
   4. Or equal.

2.2 ALKALINITY TESTING

A. Alkalinity Test, ASTM F 710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
   1. Digital wide range 1–14 pH meter.
   2. Waterproof flat tip.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site: Weatherproofed, doors installed and windows secured. Do not start testing process when site has standing water, surface contaminates, exposed to exterior conditions or concrete installation is less than 90 days of age.

3.2 PREPARATION

A. Clean concrete substrates of adhesives residue, paint, curing, sealing, floor coverings a minimum of 24 hours prior to installation of testing equipment.

B. Temperature & Humidity: Maintain site at the temperature and humidity conditions to those anticipated during normal occupancy and maintain these conditions minimum of 7 days (exceed ASTM F1869 requirements) prior and during testing period.

C. When a building is not under HVAC control, a recording hygrometer or data logger shall be in place recording conditions during the test period. A transcript of this information must be included with testing results.

3.3 MOISTURE TESTING

A. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F2170.

B. Floor shall have reading of 95% or less per ASTM F2170; unless finish flooring product require better value.

3.4 ALKALINITY TESTING

A. Test: Perform pH testing per ASTM F710.

B. pH range between 8 and 10; unless finish flooring product require better value.

3.5 FIELD QUALITY CONTROL

A. Testing: Engage and pay for qualified independent testing agency specified to perform the following field tests and inspections and prepare test reports:
   1. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures.
   2. Testing agency shall verify thickness of coatings during traffic coating application.
   3. If test results show coating materials do not comply with requirements, remove noncomplying materials, prepare surfaces, and reapply coatings.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 071909

SECTION 071920 - CONCRETE MOISTURE AND ALKALINITY BARRIER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplemental, and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Concrete moisture and alkalinity barrier when moisture or alkalinity test fails.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for independent moisture and alkalinity testing prior to installation of flooring materials.

1.3 PERFORMANCE REQUIREMENTS

A. Ground and Floor Surfaces: Slip resistant per CBC 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include manufacturer's printed statement of VOC content.

B. Samples: For each type of barrier and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

C. Manufacturer Certificates: Signed by manufacturers certifying that barrier comply with requirements.

D. Qualification Data: For Installer.

E. Product Test Reports: Independent third party testing results:
   1. ASTM E 96 Water Vapor Transmission: up to 95% Vapor Reduction
   2. ASTM D 4541 Concrete Adhesion: 500psi or concrete cohesive failure
   3. ASTM D 1308 Chemical Resistance: 100% resistant to acid and alkali

F. Field Quality Control Documents: Post installation testing by independent testing agency per ASTM F1869, ASTM D 4541.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Extended Warranty Period: Barrier warranty for 15 years covering performance, concrete adhesion, moisture or alkalinity damage to barrier and installed floor coverings. In the event of barrier failure, manufacturer shall cover labor and material cost to replace moisture or alkalinity damaged flooring or coatings, reapply barrier, adhesives, patching compounds and installation accessories.
   1. Moisture Vapor Reduction: No upper performance limitations.
   2. Alkalinity Control: No upper performance limitations.
   3. Manufacturing defects warranties are not acceptable.

B. Warranty shall not exclude ACI documents, dew point, concrete salts, admixtures, resin and silicate surfaces treatments. Installations on slab surfaces deems acceptance of on site conditions. Barrier manufacturer is responsible for complete review of concrete mix designs, admixtures, sub slab vapor barrier installed and curing methods for written acceptance prior to installations.

C. Installer: Submit 15 year warranty covering installation defects and improper installations on workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Concrete Moisture and Alkalinity Barrier: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. VAP-1 2000 FS by Koster. (Basis of Design)
   2. Vapor-Guard DC by Advance Moisture Control.
   3. MES 100 by Floor Seal Technology Inc.
   4. Or equal.

2.2 CONCRETE MOISTURE AND ALKALINITY BARRIER

A. Product: VAP I 2000 FS by Koster or equal.
   1. Fast-setting, one-coat, membrane-forming, moisture vapor control system consisting of a unique combination of epoxy resins and other compounds formulated to prevent floor covering failures on concrete slabs with elevated levels of moisture.
   2. Meets or exceeds the performance requirements in ASTM F3010-13 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
   3. Has no upper limit for water vapor emission from concrete floor slabs. It can be applied to concrete slabs with relative humidity up to 100% RH and it provides protection from sustained exposure to pH 14.
   4. Low permeance of 0.047 perms, moisture blocker for virtually all types of flooring, including low permeance flooring such as sheet goods and rubber tile.
   5. Compliant with all state and federal VOC regulations, having VOC content of 0 g/L, which allows installation in sensitive areas such as hospitals, schools, and grocery stores.

B. Concrete Topcoat: Cement based self-leveling underlayment product acceptable to sealant manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to barrier manufacturer's written instructions, to ensure that surface is dry enough.
   1. Shot blast surface to allow maximum penetration and adhesion. Grind near walls and edges.

B. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live plants and grass.

C. Coordination with Sealants: Do not apply barrier until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
   1. Barrier work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATION

A. Barrier: Apply by squeegee and roller application methods to saturate entire surface. Spread rates shall produce results of up to 95% moisture reduction per ASTM E 96 and post installation testing rate specified.

B. Roller and squeegee methods to saturate concrete porosity. Final surfaces shall be light reflective white.

C. Joint and Crack Treatment: Apply barrier directly over cracks, holes, and slab imperfections for maximum flexibility, moisture vapor and alkalinity control.

D. Cement Topcoat: As required for applications under resilient flooring for sealants installed after curing of concrete.

3.3 FIELD QUALITY CONTROL

A. Site Tests:
   1. Conduct moisture-alkalinity test by an independent testing company prior to resilient flooring and carpet installation.

3.4 CLEANING

A. Immediately clean barrier from adjoining surfaces and surfaces soiled or damaged by barrier application as work progresses. Repair damage caused by barrier application. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071920

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Concealed thermal and sound insulation.

B. Related Sections include the following:
   1. Division 9 Section "Gypsum Board" for installation in metal-framed assemblies of insulation specified by referencing this Section.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Surface-Burning Characteristics: ASTM E 84.
   2. Fire-Resistance Ratings: ASTM E 119.
   3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of building insulation that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass-Fiber Batt/Blanket Thermal and Sound Insulation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Johns Manville (JM). (Basis of Design)
   2. CertainTeed Corporation.
   3. Guardian Fiberglass, Inc.
   4. Knauf Fiber Glass.
   5. Owens Corning.
   6. Lamtec.
   7. Or equal.

B. Extruded Polystyrene Foam: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Styrofoam Z-Mate by Dow. (Basis of Design)
   2. Atlas.
   3. DiversiFoam Products.
   4. Owens Corning.
   5. Pactiv Building Products Division.
   6. Or equal.

2.2 GLASS-FIBER BATT/BLANKET INSULATION

A. Unfaced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics. Glass-fiber bonded with acrylic thermosetting binder.
   1. For walls and partitions: Unfaced Batts.

2. Formaldehyde-free, Unfaced Batts by JM or equal.

B. Faced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft vapor-retarder membrane on 1 face.
   1. For ceilings under decks: FSK-25 Faced Batts with 2 inch tabs or Panel Deck FSK-25 Faced Batts with 5 inch tabs.
   2. Formaldehyde-free, FSK-25 Faced Batts by JM or equal.

C. Thermal Rating: R values as indicated on Drawings.

2.3 EXTRUDED POLYSTYRENE FOAM (RIGID INSULATION)

A. Extruded Polystyrene Foam: ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively.
   1. 1.5 inch thick board: R-7.5.
   2. R-rating: Built-up board to comply with R-rating indicated on Drawing.

2.4 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inches wide.

B. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Install insulation in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
   4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
   5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically.
   6. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:

D. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces for sound deadening, sound absorption, thermal protection, or air-infiltration reduction. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

3.5 INSTALLATION OF INSULATION IN CEILINGS

A. Install insulation to achieve thermal indicated attached to roof or floor deck from below.

B. Insulation to roof or floor deck: Install by one of following methods.
   1. Staple insulation to sides of joists or trusses at 4 inches o.c. through bent down flanges of vapor barrier in such manner that air leaks between insulation and joints are minimized.
   2. Fasten insulation anchors to deck substrates with insulation anchor according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 076500 - FLEXIBLE SHEET FLASHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Flexible sheet flashing for windows, doors, parapets, and other openings and where indicated on Drawings.

1.3 SUBMITTALS

A. Concurrent Review Requirements: Submit submittals of this section with doors and windows sections.

B. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of flexible sheet flashing.

C. Shop Drawings: Show locations and extent of flexible sheet flashing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

D. Samples: For the following products:
   1. 12-by-12-inch square of flexible sheet flashing.

E. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

F. Qualification Data: For Installer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for flexible sheet flashing.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm that is acceptable to flexible sheet flashing manufacturer for installation of flexible sheet flashing required for this Project.

B. Source Limitations: Obtain flexible sheet flashing materials through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by flexible sheet flashing manufacturer.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Store rolls according to manufacturer's written instructions.

E. Protect stored materials from direct sunlight.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of flexible sheet flashing that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flexible Sheet Flashing: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. WR Grace (Basis of Design).
   2. FortiFlash by Fortifiber.
   3. FlexWrap and StraightFlash by DuPont.
   4. Or equal.

2.2 FLEXIBLE SHEET FLASHING

A. Product: Vycor Plus by WR Grace or equal.
   1. Self-Adhered, cross-laminated high-density polyethylene (HDPE) sheet, backed by aggressive pressure-sensitive rubberized asphalt adhesive.
   2. Thickness: 25 mil minimum per ASTM D3767, Method A.
   3. Low temperature flexibility: Unaffected at minus 45 degrees F. per ASTM D1970.

4. Elongation, ultimate failure of rubberized asphalt: 200 percent minimum per ASTM D412.
5. Cracked cycling 100 cycles: Unaffected at minus 25 degrees F. per ASTM C836.
6. Lap adhesion at minimum application temperature: 60 plf width per ASTM D1876 modified.
7. Adhesion to concrete at minimum application temperature: 60 plf width per ASTM D903.
8. ICBO: ER-6141.
9. Recommended exposure limit: 30 days.
10. Perm-A-Barrier by Grace is not acceptable.

2.3 AUXILIARY MATERIALS

A. Mastic, Joint Sealant, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by flexible sheet flashing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by flexible sheet flashing manufacturer.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install flexible sheet flashing in accordance with the manufacturer's written instructions, AAMA Publication 2400, and the applicable code.

END OF SECTION 076500

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

D. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.

E. Qualification Data: For Installer.

F. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
   1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
   2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

G. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
   1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
   2. When joint substrates are wet.
   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
   4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 2 years.

B. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
   1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

C. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Joint Sealants: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Sika Corporation
   2. Pecora Corporation.
   3. Bostik.
   4. Dow Corning Corp.
   5. GE Plastics.
   6. Sonneborn Building Products, ChemRex, Inc.
   7. Tremco, Inc.
   8. The Sherwin-Williams Company.
   9. Or equal.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

C. Colors of Exposed Joint Sealants:
   1. As selected by Architect from manufacturer's full range.
   2. Areas where concrete joint sealant will be adjacent to concrete other than standard gray, sealant color shall match adjacent color as approved by Architect.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
   3. Remove laitance and form-release agents from concrete.
      a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
   4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
   1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
   2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
   3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.

4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT LOCATION

A. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
   1. Products:
      a. SikaFlex 1A or 15LM by Sika Corp.
      b. Dynatrol I-XL by Pecora.
      c. Stampede 1 by The Sherwin-Williams Company.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Metal Lap Joint Sealant: Silicone, Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
   1. Products:
      a. SikaSil WS-295 Silicone by Sika Corp.
      b. 895 Silicone or Sil-Span by Pecora.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Concealed sealant bead in sheet metal work.

b. Concealed sealant bead in siding overlaps.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
1. Products:
a. AC-20 manufactured by Pecora.
b. 950A manufactured by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Applications:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Interior Floor Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Grade P, Class 25, Uses T, M and A; two-part.
1. Products:
a. SikaFlex 2C SL or NS with TG Additive by Sika Corp.
b. NR-200 self-leveling polyurethane and/or DYNATRED non-sag, traffic-grade polyurethane sealants by Pecora.
c. Stampede 2SL by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Standard colors matching finished surfaces.
4. Applications: Use for joints up to 1-1/2 inches.
a. Expansion joints in floors.

E. Concrete Paving Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Class 25, Uses T, I, M and A; two-part.
1. Products:
a. NR-200 Urexpan and/or DYNATRED non-sag, traffic-grade polyurethane sealant by Pecora or equal.
b. Stampede 2NS by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Gray or Limestone.
4. Applications:
a. Joints in sidewalks and vehicular paving.

F. Butyl Sealant: ASTM C 920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O; single component, solvent release, non-skinning, non-sagging.
1. Products:
a. BC-158 sealant by Pecora.
b. WL Silicone Rubber by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 12-1/2 percent.
4. Service Temperature Range: -13 to 180 degrees F.
5. Shore A Hardness Range: 10 to 30.

G. Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Products:
a. SikaSil WS 290 or WS 295 by Sika Corp.

b. 864 LM Architectural silicone or 890 silicone sealant by Pecora.
c. 790 by Dow Corning Corporation.
d. WL Silicone Ultra WL09210.

2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 25 percent.
4. Applications:
   a. Interior or exterior for joints 1/8 to 1-1/2 inch wide.
   b. Exterior use at expansion joints in masonry where substantial movement is expected.
   c. Glazing application.

END OF SECTION 079200

DIVISION 8

DOORS AND WINDOWS

SECTION 081113 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Standard hollow metal doors and frames.

B. Related Sections include the following:
   1. Division 8 Section “Door Hardware” for door hardware for hollow metal doors.
   2. Division 9 Section “Painting” for field painting hollow metal doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings.

B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
   1. Provide additional protection to prevent damage to finish of factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.
   1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of steel doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Steel Doors and Frames: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Steelcraft; an Ingersoll-Rand company. (Basis of Design).
   2. Ceco Door Products; an Assa Abloy Group company.
   3. Curries Company; an Assa Abloy Group company.
   4. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B; suitable for exposed applications for interior doors and frames.

B. Galvannealed (Metallic-Coated) Steel Sheet: ASTM A 653, Commercial Steel (CS), Type B; with minimum A60 metallic coating for exterior doors and frames.

C. Frame Anchors: ASTM A 591, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
   1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008 or ASTM A 1011, hot-dip galvanized according to ASTM A 153, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153.

E. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.

F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143.

G. Glazing: Comply with requirements in Division 8 Section "Glazing."
   1. Wired glass is not allowed.
   2. Tempered or fire-rated where required.

H. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD HOLLOW METAL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
   1. Design: Flush panel.
   2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
      a. Standard Core: Honeycomb, U-factor of 0.69, R-value of 1.45.
      b. Fire Door Core: As required to provide fire-protection indicated.
   3. Vertical Edges for Single-Acting Doors: Beveled edge.
      a. Beveled Edge: 1/8 inch in 2 inches.
   4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
   5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.
   6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
   7. Vision, Narrow Lite, Half Glass Doors: Size as indicated on Drawings.

B. Exterior Doors: Face sheets fabricated from galvannealed (metallic-coated) steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 16 gage (0.053 inch).
         1) Product: Series L16 by Steelcraft.

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless galvanized (metallic-coated) sheet is indicated. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 18 gage (0.042 inch).
         1) Product: Series L18 by Steelcraft.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.4 STANDARD HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated from metallic-coated steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile welded unless otherwise indicated.
   3. Frame: 14 gage (0.067-inch) thick steel sheet.
      a. Product: F14 Series by Steelcraft.

C. Interior Frames: Fabricated from cold-rolled steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile welded. Knocked down is not allowed.
   3. Frame: 16 gage (0.053-inch) thick steel sheet.
      a. Product: F16 Series by Steelcraft.
   4. Frames for Wood Doors: Same type as for steel doors.
   5. Frames for Borrowed Lights: Same as adjacent door frame.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
   2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
   3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
   1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
   2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- wide steel.

C. Provide Screw-In Top Cap for exterior doors.

D. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

2.7 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Tolerances:
   1. Standard doors and frames: Fabricate hollow metal work to tolerances indicated in SDI 117.

C. Hollow Metal Doors:
   1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
   2. Glazed Lites: Factory cut openings in doors.
   3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
   2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
6. Jamb Anchors: Provide number and spacing of anchors as follows:
   a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      1) Three anchors per jamb up to 60 inches high.
      2) Four anchors per jamb from 60 to 90 inches high.
      3) Five anchors per jamb from 90 to 96 inches high.
      4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
      5) Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.
   b. Compression Type: Not less than two anchors in each jamb.
   c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
   1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
   2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
   3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.

G. Air Infiltration: Maximum rate not more than indicated when tested according to AAMA/WDMA 101/I.S.2/NAFS, Air Infiltration Test.
   1. Maximum Rate: 0.3 cfm/sq. ft. of area at an inward test pressure of 1.57 lbf/sq. ft.
   2. Maximum Rate: 0.1 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft.

2.8 STEEL FINISHES

A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Field-Applied Paint Finish: Comply with Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
   1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
   1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire-protection-rated openings, install frames according to NFPA 80.

b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
c. Install frames with removable glazing stops located on secure side of opening.
d. Install door silencers in frames before grouting.
e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
g. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
   a. Post-installed expansion anchors shall comply with IR 19-1.
   b. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
7. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
   a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes solid-core doors.

B. Related Sections include the following:
   1. Division 8 Section "Steel Doors and Frames" steel door frames.

1.3 SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.

B. Other Action Submittals:
   1. Schedule: Provide a schedule of flush wood door work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
      a. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
      b. Indicated specific model number of door and frame.
      c. Indicated hardware group.
      d. Indicate dimensions and locations of mortises and holes for hardware.
      e. Indicate dimensions and locations of cutouts.
      f. Indicate doors to be factory finished and finish requirements.
      g. Indicate fire ratings for fire doors.

C. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:
   1. Faces of Factory-Finished Doors: Show the full range of colors available for stained finishes.

D. Samples for Verification:
   1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edgings representing typical range of color and grain for each species of veneer and solid lumber required. Finish sample with same materials proposed for factory-finished doors.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

B. Quality Standard: Comply with NWWDA I.S.1-A, "Architectural Wood Flush Doors."
1. Performance duty Level: Extra Heavy Duty.
2. Factory machined for door hardware and high density hardware blocking.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to CBC Section 715.
1. Oversize, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide oversize fire door label or certificate of inspection, from a testing and inspecting agency acceptable to authorities having jurisdiction, stating that doors comply with requirements of design, materials, and construction.
2. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch top to bottom, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty:
   a. Solid-Core Interior Doors: Life of installation.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flush Wood Doors: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Architectural Series by Oregon Door. (Basis of Design)
      a. Profile: Standard Profile, PC-5.
   2. Marshfield-Algoma; Masonite Inc.
   3. Eggers Industries; Architectural Door Division.
   4. VT Industries Inc.
   5. Or equal.

2.2 DOOR CONSTRUCTION, GENERAL

A. Adhesives: Do not use adhesives containing urea formaldehyde.

B. Doors for Transparent Finish:
   1. Grade: Custom (Grade A faces).
   2. Species and Cut: Plain sliced white birch, rotary cut.
   3. Match between Veneer Leaves: Book match.
   4. Assembly of Veneer Leaves on Door Faces: Running match.
   5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
   6. Stiles: Same species as faces.

2.3 SOLID-CORE DOORS

A. Core:
   1. Structural-Composite-Lumber-Core: WDMA I.S.10.
      a. Screw Withdrawal, Face: 700 lbf.
      b. Screw Withdrawal, Edge: 400 lbf.

B. Doors:
   1. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

C. Veneer-Faced Doors:

1. Construction: Five or seven plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

D. Fire-Rated Doors:
1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
2. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.
3. Edge Construction: At hinge stiles, provide manufacturer's standard laminated-edge construction with improved screw-holding capability and split resistance and with outer stile matching face veneer.
4. Pairs: Furnish formed-steel edges and astragals with intumescent seals for pairs of fire-rated doors, unless otherwise indicated.
   a. Finish steel edges and astragals with baked enamel same color as doors.

2.4 DOOR FRAMES

A. Hollow Metal Frames: Comply with Division 8 Section “Steel Door and Frames”.

2.5 FABRICATION

A. Fabricate doors in sizes indicated for Project-site fitting.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing.

B. Finish doors at factory.

C. Transparent Finish:
1. Grade: Custom.
2. Finish: NWWDA I.S.1-A System TR-6 catalyzed polyurethane.
3. Staining: As selected by Architect from manufacturer's full range.
4. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.
   1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Division 8 Section "Door Hardware."

B. Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
   1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
   1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold.
      a. Comply with NFPA 80 for fire-rated doors.
   2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
   3. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Access doors and frames for walls and ceilings.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for mortise or rim cylinder locks and master keying.
   2. Division 9 Section “Painting” for field applied finishes.

1.3 SUBMITTALS

A. Product Data: For each type of access door and frame indicated. Include construction details, materials, individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.

D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of access door(s) and frame(s) through one source from a single manufacturer.

B. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of access doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Access Doors and Frames: Subject to compliance with requirements, provide products by one of the following:
   1. Karp Associates Inc.
   2. Acudor.
   3. Milcor Inc.
   4. Nystrom, Inc.
   5. MIFAB.
   6. Or equal.

2.2 STEEL MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153, for galvanizing steel and iron hardware.

B. Steel Sheet: Cold-rolled steel sheet substrate complying with ASTM A 1008, Commercial Steel (CS), exposed.

C. Steel Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   1. Factory Surface Preparation for Steel Sheet: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
   2. Field Finish: Factory prime for field painting as specified in Division 9 "Painting".

D. Drywall Beads: Edge trim formed from 0.0299-inch zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum board.

2.3 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Recessed Door to Receive Drywall Type:
   1. Fire-Rated: Model 450FR by Karp.
   2. Non-Fire-Rated: Model RDW by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Door shall be recessed 1 inch.
   5. Trim shall be galvanized steel dry wall bead.
   6. Hinge shall be concealed pivoting rod type.
   7. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   8. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   9. Door Sizes:
      a. As indicated on Drawings.
   10. Field Finish: Comply with Division 9 Section “Painting”.

B. Flange Type:
   1. Fire-Rated: Model KRP-250 by Karp.
   2. Non-Fire-Rated: Model DSC-214M by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Flange: One-piece construction, 3/4 inch wide.
   5. Hinge shall be concealed continuous piano hinge.
   6. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   7. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   8. Door Sizes:
      a. As indicated on Drawings.
   9. Field Finish: Comply with Division 9 Section “Painting”.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
   1. Exposed Flanges: Nominal 1 to 1-1/2 inches wide around perimeter of frame.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
   1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

A. Field finish per Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 083214 - FOLDING ALUMINUM-FRAMED GLASS DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding aluminum-framed glass doors.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for hardware not specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide folding aluminum-framed glass doors capable of complying with performance requirements indicated, based on testing manufacturer's folding doors that are representative of those specified, and that are of minimum test size indicated below:
   1. Size required by AAMA/WDMA/CSA 101/I.S.2/A440 for gateway performance.

B. Structural Performance: Provide folding aluminum-framed glass doors capable of withstanding the effects of the following loads, based on testing units representative of those indicated for Project that pass AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Load Structural Test:
   1. Design Wind Loads: Determine design wind loads under conditions indicated according to ASCE/SEI 7.
   2. Deflection Limits: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less, at design pressure based on testing performed according to AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Load Deflection Test, or structural computations.

C. Windborne-Debris Resistance: Provide sliding aluminum-framed glass doors capable of resisting impact from windborne debris, based on the pass/fail criteria as determined from testing sliding aluminum-frames glass doors identical to those specified, according to ASTM E 1886 and testing information in ASTM E 1996 or AAMA 506 and requirements of authorities having jurisdiction.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions.

B. Shop Drawings: For folding aluminum-framed glass doors. Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, and the following:
   1. Mullion details for fenestration combinations including reinforcement and stiffeners.
   2. Joinery details.
   3. Expansion provisions.
   4. Flashing and drainage details.
   5. Weather-stripping details.
   6. Thermal-break details.
   7. Glazing details.
   8. Accessories.

C. Samples for Initial Selection: For each type of folding aluminum-framed glass door indicated.
   1. Include similar Samples of hardware and accessories involving color selection.

D. Samples for Verification: For folding aluminum-framed glass doors and components required, prepared on Samples of size indicated below:
   1. Main Framing Member: 12-inch- long section with weather stripping, glazing bead and factory-applied color finish.
   2. Hardware: Full-size units with factory-applied finish.

E. Qualification Data: For qualified Installer and manufacturer.

F. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency, for each class, grade, and size of folding aluminum-framed glass door. Test results based on use of downsized test doors will not be accepted.

G. Maintenance Data: For finishes, weather stripping, operable panels, and operating hardware to include in maintenance manuals.

H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating folding aluminum-framed glass doors that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: An installer acceptable to folding door manufacturer for installation of units required for this Project.
   1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility including preparation of data for folding aluminum-framed glass doors, including Shop Drawings and Designated-Design Submittal, based on

testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: Obtain folding aluminum-framed glass doors from single source from single manufacturer.

D. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of folding aluminum-framed glass doors. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

E. Fenestration Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440, "Standard/Specification for Windows, Doors, and Unit Skylights," for minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
   1. Provide AAMA or WDMA-certified, folding aluminum-framed glass doors with an attached label.

F. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201.
   1. Subject to compliance with requirements, permanently mark safety glass with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction.

G. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of folding aluminum-framed glass door openings by field measurements before fabrication.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of folding aluminum-framed glass doors that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to meet performance requirements.
      b. Structural failures including excessive deflection.
      c. Water leakage or air infiltration.
      d. Faulty operation of movable sash and hardware.
      e. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      f. Deterioration of insulating glass as defined in Division 8 Section "Glazing."
   2. Warranty Period:
      a. Folding Door: 5 years.

b. Glazing: 10 years.
c. Metal Finish: 5 years.

B. Installer's Warranty: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Folding Aluminum-Framed Glass Doors:
1. Nana Wall Systems, Inc. (Basis of Design)
2. Fleetwood.
3. Western.
4. LaCantina Doors.
5. Or equal.

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by folding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.

B. Fasteners: Provide fasteners of aluminum, nonmagnetic stainless steel, or other materials warranted by manufacturer to be noncorrosive for SC 3 severe service conditions and compatible with members, trim, hardware, anchors, and other components of folding aluminum-framed glass doors. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.
1. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Accessories: Provide anchors, clips, and accessories of aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron for folding aluminum-framed glass doors, complying with ASTM B 456 or ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Provide aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel reinforcing members that are noncorrosive for SC 3 severe service conditions and that comply with AAMA/WDMA/CSA 101/I.S.2/A440; provide sufficient strength to withstand design pressure indicated.

E. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action, and completely concealed when folding aluminum-framed glass door is closed.
1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/WDMA/CSA 101/I.S.2/A440.

F. Folding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701.
   1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semirigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 702.

G. Sealant: For sealants required within fabricated folding doors, provide folding aluminum-framed glass door manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

H. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

2.3 FOLDING DOOR

A. Product: SL45 Aluminum Framed Folding System by Nanawall or equal.
   1. General Description:
      a. Monumental, standard aluminum folding system designed to provide an opening glass wall or storefront up to 43’ wide and a paired panel system forunlimited total width; see Maximum Size Chart. The folding system is available in various configurations utilizing one to twelve panels or more with unhinged pairs of panels; see elevation drawings. The option exists for swing entry/exit panel(s), but note panel size constraints with a swing panel not hinged to a side jamb. There are many design possibilities; units can be either: all inward-opening or all outward-opening; some panels inward-opening and some panels outward- opening; panels can be center-pivoted; see details in section drawings.
   2. Frame and Panels:
      a. The nominal extruded aluminum frame and panel thickness is 1 3/4” (45 mm).
      b. Panels are pre-assembled, and all pins and screws needed to assemble frames are provided. On a folding pair of panels hinged to a side jamb, the panel hinged to the side jamb is 2” (52 mm) narrower in nominal width than the other panels.
   3. Sliding/Folding Hardware:
      a. For sliding and folding each pair of panels, a patented, loadbearing, upper-running carriage is attached to the upper corner of a panel; see section drawings. Attached to the lower corner is a lower-running carriage as a guide. The double pair, twin-tandem, upper-running carriage is constructed to ensure even pressure distribution on all four rollers.
      b. Rollers have sealed bearings and are coated with toughened Polyamide to ensure a quiet running and optimal resistance to extreme. Two to five hinges per connection are provided to connect panels together and to connect panels to frames.
      c. Finish for zinc die cast hinges would be closest powder coat match to panel profile. Available as an option are stainless steel hinges.
      d. Removable custodial hardware in lieu of pull handles at operable panels.
   4. Tested Data:
      a. Air Infiltration per ASTM E-283,cfm/ft2: 1.57 psf.
      b. Water Penetration per ASTM E-547: 1.56 psf.
      c. Acoustical Performance: The SL45 with STC 40 laminated glass achieved STC and Rw values of 36.

2.4 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Finish and Color: Match Division 8 Section “Aluminum-Framed Entrances and Storefronts” as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
   1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
   2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches of opening.
   3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

B. Verify rough opening dimensions, levelness of threshold substrate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight folding aluminum-framed glass door installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing doors, hardware, accessories, and other components.

B. Install folding aluminum-framed glass doors level, plumb, square, true to line, without distortion, warp or rack of frames and panels, or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing, vapor retarders, air barriers, water/weather barriers, and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

D. Install folding aluminum-framed glass doors and components to drain condensation, water penetrating joints, and moisture migrating within doors to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials according to ASTM E 2112, Section 5.12 "Dissimilar Materials."

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Lubricate hardware and moving parts.

B. Adjust operating panels and screens to provide a tight fit at contact points and weather stripping for smooth operation, without binding, and a weathertight closure.

C. Adjust hardware for proper alignment, smooth operation, and proper latching without unnecessary force or excessive clearance.

D. Clean aluminum surfaces immediately after installing folding doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Avoid damaging protective coatings and finishes. Remove nonpermanent labels, and clean surfaces.

E. Clean glass immediately after installing folding aluminum-framed glass doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.

F. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

G. Protect folding door surfaces from contact with contaminating substances resulting from construction operations. During construction, monitor folding door surfaces adjacent to and below exterior concrete and masonry surfaces for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact folding door surfaces, remove contaminants immediately according to manufacturer's written instructions.

H. Refinish or replace folding aluminum-framed glass doors with damaged finishes.

I. Replace damaged components.

END OF SECTION 083214

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. DSA Deferred Approval.
2. Aluminum-framed storefronts.
3. Manual-swing aluminum doors.

B. Related Sections include the following:
1. Division 1 Section “Submittal Procedures” for additional DSA Deferred Approval requirements.
2. Division 7 Section “Flexible Sheet Flashing” for flashing windows, door, and other openings.
3. Division 7 Section "Joint Sealants" for installation of joint sealants installed with aluminum-framed systems and for sealants to the extent not specified in this Section.
4. Division 8 Section “Steel Doors and Frames” for windows made of hollow metal frames.
5. Division 8 Section "Glazing" for glazing requirements to the extent not specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
1. Structural loads.
2. Thermal movements.
3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
4. Dimensional tolerances of building frame and other adjacent construction.
5. Failure includes the following:
   a. Deflection exceeding specified limits.
   b. Thermal stresses transferred to building structure.
   c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
   d. Noise or vibration created by wind and thermal and structural movements.
   e. Loosening or weakening of fasteners, attachments, and other components.
   f. Sealant failure.
   g. Failure of operating units to function properly.

B. Structural Loads:
   1. Wind Loads: As indicated on Drawings.
   2. Seismic Loads: As indicated on Drawings.

C. Deflection of Framing Members:
   1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
   2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:
   1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity but not less than 10 seconds.

E. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft.

F. Water Penetration Under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

G. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 53 when tested according to AAMA 1503.

H. Average Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having average U-factor of not more than 0.69 Btu/sq. ft. x h x deg F when tested according to AAMA 1503 or NFRC 100/200 values.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product indicated.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

C. Fabrication Sample: Of each vertical-to-horizontal intersection of systems, made from 12-inch lengths of full-size components and showing details of the following:
   1. Joinery.

2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems.

E. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Capable of assuming engineering responsibility and performing work of this Section and who is acceptable to manufacturer.
1. Engineering Responsibility: Preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer's standard assemblies.

B. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

C. Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

D. Welding: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code--Aluminum."

E. Mockups: Build mockups to demonstrate aesthetic effects and set quality standards for fabrication and installation.
1. Build mockup of typical wall area as shown on Drawings.
2. Field testing shall be performed on mockups according to requirements in Part 3 "Field Quality Control" Article.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 WARRANTY

A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including, but not limited to, excessive deflection.
      b. Noise or vibration caused by thermal movements.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      d. Water leakage through fixed glazing and framing areas.
      e. Failure of operating components to function properly.
   2. Warranty Period: 2 years.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.

C. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Entrance, Storefronts, and Windows: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Arcadia Inc. (Basis of Design)
   2. Kawneer.
   3. EFCO Corporation.
   4. Oldcastle Building Envelop.
   5. Or equal.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   1. Sheet and Plate: ASTM B 209.
   2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308.
5. Welding Rods and Bare Electrodes: AWS A5.10.

B. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
1. Structural Shapes, Plates, and Bars: ASTM A 36.
2. Cold-Rolled Sheet and Strip: ASTM A 1008.
3. Hot-Rolled Sheet and Strip: ASTM A 1011.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

F. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

G. Product: TC470 Thermally Broken Series by Arcadia or equal.
1. Type: 2-1/4 by 4-1/2 inch offset captured glazed system.
2. Framing members, transition members, mullions, adaptors, and mounting: Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10a T6).
3. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM.A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.
4. Glazing: As indicated on Drawings and as specified in Division 8 “Glazing”.
5. Glazing Gasket (Silicone Compatible)
   a. Compression-type design, replaceable, molded or extruded santoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).

b. Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.

6. Sound Transmission Lost Test by ETS-Lindgren Acoustical Research Laboratory, a NVLAP-Accredited under Lab Code 100286-0.
   a. STC: 36.

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 8 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

2.5 DOORS AND FRAMES

A. Product: WS512 Series, Wide Stile Door 1-3/4” by Arcadia.
   1. Vertical Stiles: 5 inches.
   2. Top Rail: 5-1/8 inches.
   3. Bottom Rail: 10-1/2 inches.
   4. Glazing Stops: Square snap-in type.
   5. Glazing: 1/4 inch as specified in Division 8 Section “Glazing”.
   6. Glazing Gasket: Compression-type design.
   7. Major portions of the door stiles a nominal .125 inches and glass stops .050 inches thick.
   8. Door members: Extruded 6063-T6 aluminum alloy (ASTM B221-Alloy G.S. 10a T6).
   9. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc plated steel in accordance with ASTM A-164. Shall be aluminum or steel, providing the steel is properly isolated from aluminum.
   10. Stiles and rails shall be tubular sections accurately joined, flush and hairline at corners with heavy concealed reinforcement brackets secured with machine bolts, with optional MIG weld. Exposed screws not permitted.
   11. Each door leaf equipped with an adjusting mechanism, located in the top rail near the lock stile.
   12. Prepare internal reinforcement for door hardware.
   13. Weatherstripping: Hard-backed poly pile in door and/or frame. Meeting stile of all pair of doors have a double line hard-backed poly-pile astragal.

B. Door Hardware: Factory hardware and as specified in Division 8 Section "Door Hardware."
   1. Door hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the general contractor and the entrance manufacturer to insure the building project is not delayed. Coordinate master-keyed requirements.

2. Weather Stripping: Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC to keep the water out. Do not use standard brush type.
3. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.6 ACCESSORY MATERIALS

A. Insulating Materials: As specified in Division 7 Section "Building Insulation."

B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 7 Section "Joint Sealants."

C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

D. Break Metal: Material and finish to match storefronts as approved by Architect.

2.7 FABRICATION

A. Form aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing from interior.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing (without projecting stops).

E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

F. Doors: Reinforce doors as required for installing hardware.

1. At pairs of exterior doors, provide sliding weather stripping retained in adjustable strip mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Hardware Installation:
1. Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.
2. Hardware supplier shall furnish hardware to door manufacturer prior to fabrication and coordinate hardware delivery with door manufacturer to insure project is not delayed.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
1. Color: Dark Bronze #40 as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:
1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight, unless otherwise indicated.

B. Metal Protection:
   1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
   2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

F. Entrances: Install to produce smooth operation and tight fit at contact points.
   1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
   2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

G. Install insulation materials as specified in Division 7 Section "Building Insulation."

H. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

I. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
   1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
   2. Alignment:
      a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
      b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
   3. Diagonal Measurements: Limit difference between diagonal measurement to 1/8 inch.

3.3 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.
   1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

END OF SECTION 084113

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Door hardware.

2. Door Hardware Schedule.

1.02 DESIGN REQUIREMENTS

A. Design Requirements:

1. Exit doors, including each leaf of a pair of doors, shall always be operable from the inside by the simple turn of a lever or by pushing an exit device without the use of a key or any special knowledge or effort; this includes doors of storage rooms.

2. Unless otherwise specified, hand activated door opening hardware shall be located 36 inches above the finish floor.

3. Dead bolts are not permitted unless operable with a single effort by a lever type hardware.

4. The force applied to operate exit hardware shall not require more than 5 lbs. maximum applied in the direction of travel.

5. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.

6. The clear opening width for a door shall be 32" minimum. For a swinging door it shall be measured between the face of the door & the stop, with the door open 90 degrees. There shall be no projections into it below 34" and 4" maximum projections into it between 34" and 80" above the finish floor or ground. Door closers and stops shall be permitted to be 78" minimum above the finish floor or ground. CBC Section 11B-404.2.3.

7. Handles, pulls, latches, locks and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. Operable parts of such hardware shall be 34" minimum and 44" maximum above the finish floor or ground. Where sliding doors are in the fully open position, operable hardware shall be exposed and usable from both sides. CBC 11B-404.2.7.

8. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.

    a. Interior hinged doors, sliding or folding doors and hinged doors: 5 pounds. Maximum. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in the closed position.

    b. The force required for activating any operable parts, such as lever hardware or disengaging other devices shall be 5 pounds maximum to comply with CBC 1B-309.

B. Regulatory Requirements:

1. Comply with CBC requirements.

2. Hardware for fire doors shall conform to requirements of UL - Fire Protection and Accident Hazard Equipment and the California State Fire Marshal listing, NFPA - 80 and CBC requirements for positive pressure testing.

3. Hardware shall meet the requirements of CBC, Chapter 11B.

4. Door closing speed shall be as follows: CBC Section 11B-404.2.8. Closer shall be adjusted so the required time to move a door from a open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum. Spring hinges shall be adjusted so that the time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.

5. Threshold shall comply with CBC section 11B-404.2.5.

6. Floor stops shall not be located in the path of travel and 4” maximum from walls.

7. Hardware (including panic hardware) shall not be provided with “Night Latch” (NL) function for any accessible doors or gates unless the following conditions are met: (Such conditions must be clearly demonstrated and indicated in the specifications) Such hardware has a dogging feature and it is dogged during the time the facility is open.

1.03 SUBMITTALS

A. Product Data: Finish Hardware Schedule:

1. Submit schedule including recap sheet:

a. Include manufacturer’s name, catalog number, relevant dimensions, fasteners, location of item in Work, door index number, frame material, door material, door size and thickness, door type, handing, fire-rating (if any), and sound-rating (if any).

b. Hardware shall be listed by "Headings" in following manner:

1) HEADING NO. 1

1 SINGLE/PAIR OF DOORS NO. (Room and Number) from/to (Room and Number)

1 SINGLE/PAIR OF DOORS NO. (Room and Number) from/to (Room and Number)

List the appropriate numbers from the finish hardware.

2) HEADING NO. 2, etc.

1.04 QUALITY ASSURANCE

A. Each type of finish hardware furnished for the Work shall be of same make or manufacture, unless otherwise specified. Where existing items are being supplemented with new items, match existing items, subject to current code requirements and accessibility recommendations.

B. Coordinate and deliver templates or physical Samples of finish hardware items to manufacturer of interfacing items, such as doors and frames, in a timely manner to insure orderly progress of Work.

C. Comply with the following as a minimum requirement:

1. Conform to Builders Hardware Manufacturers Association (BHMA) Finish Code, latest edition.

2. DHI WDHS.3: Recommended Locations for Architectural Hardware for Wood Flush Doors

3. DHI WDHS.4: Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors.

4. HMMA 831: Recommended Hardware Locations for Custom Hollow Metal Doors and Frames

1.05 DELIVERY, STORAGE AND HANDLING

A. Package each item of hardware and each lockset individually, complete with necessary installation instructions, screws and fastenings, and installation templates; marked with item number corresponding to number on Finish Hardware Schedule.

1.06 WARRANTY

A. Manufacturer shall provide a minimum two year material warranty except as follows:

1. Provide a ten year manufacturer's material warranty for door closers.

2. Provide a five year manufacturer's material warranty for locksets and exit devices.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Butts and Hinges:

1. Width of hinges shall be of sufficient size to clear trim.

2. Furnish one pair of hinges for door leaves up to 5-foot high. Furnish one additional hinge for every additional 30 inches or fraction thereof.

3. Butts for doors shall be non-rising, loose pins, with button tip.

4. Exterior and interior out-swinging doors with butt hinges shall be furnished with hinges furnished with a setscrew in hinge barrel to make pin non-removable (NRP); Butt hinges at exterior out-swinging doors shall have stainless steel pins and bearings.

5. Hinges installed on painted doors shall be BHMA 600 finishes. Exterior doors shall have non-ferrous hinges. Fire-rated doors shall have steel or stainless steel hinges.

B. Locksets and Trim:

1. Unless otherwise specified, locks shall be of mortise type, complying with ANSI A156.13, grade 1.

2. Unless otherwise specified, escutcheons shall be 7 ½-inch by 2 ¼-inch wide by 0.050 thick minimum.

3. Levers shall be cast, and shall return to within ½ inch of face of door.

4. Outside lever shall be pinned. Inside lever shall be by "Allen Head Set Screw" or by "Spanner Ring Nut".

5. Lock strikes shall be curved lip type, with exposed edges and corners rounded, of sufficient length to protect jamb and trim, and shall not extend more than 1/8 inch beyond trim, jambs or face of doors in pairs. At out-swinging pairs with overlapping astragal, strike shall have a 7/8 inch lip-to-center dimension. Dust box shall be provided for door locks.

6. Locksets throughout shall be lever type of same manufacture.

C. Exit Devices:

1. Unless otherwise specified, exterior doors shall be furnished with rim touch bar device; right hand reverse active leaf - night latch function by cylinder by hardened cylinder ring by flush pull by sex nut and bolt. Left-hand reverse inactive leaf - exit only by flush pull by sex nut and bolt.

2. Unless otherwise specified, interior doors shall be furnished with rim touch bar device; right hand reverse active leaf-lever handle by cylinder, left hand reverse inactive leaf; exit only.

3. Fire labeled exit devices shall conform to UL label requirements and be listed by the California State Fire Marshal.

4. Exit devices throughout shall be touch bar types of same manufacture. Exit devices shall meet ANSI BHMA, A153.3 Grade 1.

5. Lever design shall match lock levers.

6. Exit devices shall be furnished sized for the specific door width and height.

D. Door Closers:

1. Door closers shall conform to ANSI A156.4, Grade 1, CBC 1133B.2.5.

2. Door closers shall be heavy duty, rigid parallel arm; provide regular arm for regular bevel doors.

3. Door closer shall be full rack and pinion type, adjustable back check, and sweep and latch speed with key regulating screws.

4. Door closer shall have full fitted cover of plastic or stainless steel, attached to door closer body with tamperproof screws.

5. Provide spacer block or support bracket for securing fifth screw on closer arm shoe. Provide special brackets, shoes, or other attachment devices as required.

6. Maximum pressure to operate doors shall not exceed following:

a. Fire rated doors: The authority having jurisdiction may determine the maximum force, not to exceed 15.0 pounds to operate fire doors to achieve positive latching.

b. Exterior doors: 5.0 pounds.

c. Interior doors: 5.0 pounds.

7. Door closers shall be installed at the following:

a. Exterior doors.

b. Fire rated doors.

E. Protection Plates: Furnish kick plates of 10-inch high by 2-inch less door width on single doors, 10-inch high by 1 inch less door width on pairs of doors. Provide one plate for push side of closer-equipped doors.

1. Kick shall be a minimum 0.050 inch thick; Type 304 stainless steel, with finished beveled edges (B4E).

F. Stops:

1. Floor stops shall be mounted to protect door and trim.

2. Furnish stop of appropriate height, minimum ¾ inch above undercut of door.

3. Where the specified floor stop cannot be installed or would present a pedestrian hazard, omit and furnish a heavy-duty overhead stop (626 finish); if closer is specified, furnish closer with integral spring-cushion stop arm.

G. Weather stripping/Gasketing:

1. Install gaskets and intumescent seals on fire rated doors and frames.

2. Unless otherwise specified, install weather stripping on doors from air-conditioned spaces to the exterior: fastener-applied frame seals, nylon-brush door sweeps, and, at pairs, astragals.

H. Thresholds: Unless otherwise specified, thresholds shall conform to CBC Chapter 11B accessibility standards.

I. Push Plates: Plates shall be 0.050 thick, 6-inch by 16-inch minimum, with beveled edges.

1. Door Pulls: Pulls shall have protective plate mounted under pull, 0.050 inches thick, 4-inch by 16-inch beveled on four edges.

2. Hardware Cutouts: Pull plates and push plates installed over locking hardware shall have cylinder and turn lever cutouts as required.

J. Automatic Flush Bolts:

1. Strike plates for automatic bolts shall be provided for active door.

2. Provide dust proof strikes for bottom bolts.

K. Coordinators:

1. Provide brackets as required for items fastened to coordinators.

2. Provide door strike plates for both doors with coordinators.

L. Fasteners: Shall match finish of hardware. Provide fasteners for all hardware at electrical room and exterior doors: stainless steel for chrome, aluminum, or stainless finish hardware; brass or bronze for brass or bronze finish hardware.

2.02 FINISH

A. Unless otherwise specified, finish of hardware shall be dull chromium-plated BHMA 652 for steel-based metals, BHMA 626 for brass-based metals, except for kickplate, escutcheons, push plates, lock strike plates, and exit device touch bars, which shall be BHMA 630. Levers for locksets and exit devices shall be BHMA 626.

B. Unless otherwise specified, overhead door closers and brackets shall be BHMA 689, to match other finish hardware in same room or space.

2.03 CYLINDERS AND KEYING

A. Project shall be keyed in accordance with keying schedule, prepared and furnished by the Owner's Representative.

B. Provide a cylinder security collar at each exterior door cylinder. Provide cylinder collars and spacers at all cylinders as needed to provide a neat, tight and secure fit of the cylinder to the locking hardware.

C. Permanent Cylinders:

1. Permanent cylinders shall be standard core type, 7-pins maximum.

   a. Permanent cylinders as manufactured by Schlage shall be Owner furnished. The Work of this section includes obtaining the permanent cylinders from the Owner, and pinning, stamping, and installing.

   b. Provide to the Owner's Representative an approved hardware schedule and floor plans. Owner's Representative shall return with keying added to the approved hardware schedule, bitting chart, and a complete sample set of permanent keys.

2. Permanent cylinders shall be pinned with third-party (e.g., "LAB") 0.005 inch increment pins.

3. Pin cylinders according to Owner's Representative furnished sample set of permanent keys, Owner's Representative -furnished bitting chart and Owner's Representative -furnished key schedule.

4. Change keys and master keys shall operate inside and outside cylinder on two cylinder locks, unless otherwise indicated.

5. Provide the set number of change key only stamped on cylinder faces.

D. Key Control:

1. Permanent cylinders and sample set of permanent keys shall be not used during the construction phase of the Project. Temporary construction cylinders and keys used

for securing the Work is included as part of the Work of this section and will not be provided by the Owner.

2. Upon Substantial Completion of the Work, sample set of original keys shall be returned to the Owner's Representative. Duplication of Owner keys, or retaining keys, is not permitted.

3. Provide four unstamped, uncut nickel silver key blanks per cylinder to the Owner's Representative prior to Substantial Completion. Key blanks shall be by the permanent cylinder manufacturer and of the same keyway as the sample set of permanent keys or keyway designated by Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Finish hardware shall be installed as specified in Finish Hardware Schedule.

1. Placement of Hardware: Finish hardware shall be installed as indicated on hardware placement sheets attached to end of this section.

2. Provide necessary screws, bolts, anchors, and fastenings, of required sizes and type for proper installation of hardware. Exposed screws shall have Phillips heads, and wood screws shall be fully threaded.

3. Fitting: Hardware shall be accurately fitted and, with exception of prime-coated butt hinges, bar-type coordinators, and flat astragals, shall be removed before finish painting is installed. Upon completion of finish painting and/or sealing, permanently install the hardware.

4. Door escutcheons and push plates shall be installed with stainless steel or bronze, oval, "Phillips Head", fully threaded screws, not less than 3/4 inch - No. 6.

5. Exit devices shall be mounted with non-ferrous sex nuts and fully threaded machine screws, except where through bolts engage outside trim of locking case.

6. Mullion strike shall be installed with fully threaded machine screws.

7. Door closer shall be installed for maximum degree of opening of each door.

8. Following shall be installed with sex nuts and fully threaded machine screws.

   a. Door closers.

   b. Door pulls.

9. Install exterior doorstops as required. On new concrete, stops shall be installed with 1/4-20 screws. Anchor plate shall be Trimco 1268, or equal. Floor stops shall not be located in the path of travel and shall be located no more than 4 inches from walls.

10. Kickplate:

    a. Kickplates shall be installed with screws at each corner, and screws evenly spaced along each side not more than 3 inches apart on centers.

    b. Except on wood doors, screws shall be undercut pan head.

11. Thresholds shall be installed with 1/4-20 screws, set in Pour-Roc or mastic per section 07 9200, and coped to trim.

12. Sound Seals and Weather stripping / Gasketing:

    a. A mounting screw shall be installed within 2 inches of cuts or corners of weather stripping and/or gasketing.

    b. Sound seals and weather stripping and/or gasketing shall be installed with No. 8 - 3/4 inch Tek Phillips pan head screws.

3.02 ADJUSTING AND CLEANING

A. Before Substantial Completion, hardware shall be cleaned and inspected. Where hardware is deemed defective, repair or replace as required.

B. Door Closers: Final adjustments shall be performed before Substantial Completion, with mechanical system balanced and in operation.

3.03 EXAMINATION

A. Upon completion of installation, verify correct installation of hardware, according to reviewed Hardware Schedule and Keying Schedule. Verify that finish hardware is in optimum working condition.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. Locksets, exit devices, and other hardware items are referenced in the following hardware sets for series, type and function. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Do not order material until submittal has been reviewed, stamped, and signed by Architect's door hardware consultant.

C. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of

the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

3.06 LIST OF FINISH HARDWARE

Hardware Group No. 1

For use on Door #(s):
MP-1A MP-1B MP-1C

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY		628	IVE
1	EA	REMOVABLE MULLION	KR4954		689	VON
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-EO		626	VON
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-NL-OP-110MD		626	VON
1	EA	MULLION STABILIZER	154		SP28	VON
1	EA	MULLION STORAGE KIT	MT54		689	VON
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
1	EA	MORTISE CYLINDER	MATCH EXISTING (MULLION)			SCH
2	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 DT		630	IVE
1	EA	DOOR PULL	VR910 NL		630	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH		689	LCN
2	EA	PA MOUNTING PLATE	4040XP-18PA AS REQ		689	LCN
2	EA	BLADE STOP SPACER	4040XP-61 AS REQ		689	LCN
2	EA	CUSH SHOE SUPPORT	4040XP-30 AS REQ		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	WEATHER STRIPPING	BY DR/FR SUPPLIER			
2	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

5" MINIMUM STILE REQUIRED FOR HARDWARE SPECIFIED

Hardware Group No. 2

For use on Door #(s):
MP-1E

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-NL-OP-110MD		626	VON
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
1	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 NL		630	IVE
1	EA	SURFACE CLOSER	4040XP EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	STOP	FS441/444 OR WS401/402 AS REQ		626	IVE
1	EA	RAIN DRIP	142AA - OMIT IF SHELTERED		AA	ZER
1	SET	GASKETING	429AA-S INSTALL HEAD SEAL BEFORE CLOSER		AA	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

Hardware Group No. 3

For use on Door #(s):
MP-2A MP-10A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	157XY		628	IVE
1	EA	CORRIDOR W/DEADBOLT	LV9456L 06N L583-363 L283-722		626	SCH
1	EA	CORE/CYLINDER	MATCH EXISTING			SCH
1	EA	SURFACE CLOSER	4040XP SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	MOP PLATE	8400 4″ X 1″ LDW B-CS		630	IVEA
1	EA	RAIN DRIP	142AA - OMIT IF SHELTERED		AA	ZER
1	SET	GASKETING	429AA-S INSTALL HEAD SEAL BEFORE CLOSER		AA	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

VERIFY ALL HARDWARE IS COMPATIBLE WITH ALL EXISTING DOOR AND FRAME CONDITION PRIOR TO ORDERING HARDWARE

Hardware Group No. 4

For use on Door #(s):
MP-1F MP-1G

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	HINGE	5BB1HW 5 X 4.5		652	IVE
1	EA	SGL CYL DEADBOLT	B660P6		626	SCH
1	EA	DOOR PULL	8112 5"		626	IVE

Hardware Group No. 5

For use on Door #(s):
MP-1H

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	BALANCE OF HARDWARE	REUSE ALL EXISTING HARDWARE		

Hardware Group No. 6

For use on Door #(s):
MP-1BA MP-1CA

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		628	IVE
1	EA	PANIC HARDWARE	CDSI-PA-AX-35A-NL-OP-388		626	VON
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
1	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 NL		630	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH		689	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA AS REQ		689	LCN
1	EA	BLADE STOP SPACER	4040XP-61 AS REQ		689	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30 AS REQ		689	LCN
1		SEALS	BY DOOR MANUFACTURER			B/O
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

FIELD VERIFY NEW HARDWARE IS COMPATIBLE WITH DOOR/FRAME CONDITIONS PRIOR TO PLACING ORDER

END HARDWARE SCHEDULE

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
   1. Windows and doors.

1.3 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300.

1.5 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

C. Qualification Data: For installers.

D. Product Test Reports: For each types of glazing products specified.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Source Limitations for Glass: Obtain glazing products through one source from a single manufacturer for each glass type as practical.

C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

D. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.
   1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

E. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
   1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
   2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

F. Safety Glazing Products: Comply with requirements in CBC Section 2406.1.
   1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the manufacturer acceptable to authorities having jurisdiction, in compliance with CBC Section 2406.3.
   2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. GANA Publications:
      a. GANA's "Glazing Manual."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Manufacturers: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vitro. (formally PPG) (Basis of Design).
   2. Guardian.
   3. Pilkington.
   4. Visteon.
   5. Or equal.

2.2 GLASS PRODUCTS

A. Heat-Treated Float Glass (Safety Glass): ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
   1. For uncoated glass, comply with requirements for Condition A.
   2. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
   3. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated.
      a. Class II tempered safety glazing per CBC 2406.3 and Table 2406.2(1).

2.3 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of material complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

2.4 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:
   1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.5 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive.

2.6 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.7 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep system.
   3. Minimum required face or edge clearances.
   4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant where indicated.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 LOCK-STRIP GASKET GLAZING

A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system, unless otherwise indicated.

3.8 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

DIVISION 9

FINISHES

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Interior gypsum board.

B. Related Sections include the following:
   1. Division 9 Section "Tiling" for tile backer board installed as substrates for ceramic tile.
   2. Division 9 Section “Painting” for primers and finishes applied to gypsum board surfaces.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
   2. Finishes: Level 4 and 5 of gypsum board finish indicated for use in exposed locations. 4 by 4 foot sample.
      a. Finishes: For each finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
      b. Each finish indicated.
      c. Each areas such as walls, ceilings, and soffits.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gypsum board that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Interior Gypsum Board: Subject to compliance with requirements, provide products by one of the following:
   1. Georgia Pacific. (District Standard)
   2. USG Corporation.
   3. National Gypsum Company.
   4. Or equal.

B. Steel Trim Accessories: Subject to compliance with requirements, provide products by one of the following:
   1. USG Corporation.
   2. Amico.
   3. Or equal.

2.2 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.

B. Type X:
   1. Thickness: 5/8 inch for new work.
   2. Long Edges: Tapered.
   3. Products:
      a. Toughrock Fireguard X by Georgia Pacific.
      b. Type X by USG.
      c. Or equal.

C. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.
   1. Core: 5/8 inch, Type X.
   2. Use: Toilet rooms and janitor's closets walls with painted finish.
      a. DensArmor Interior Guard by Georgia Pacific.
      b. USG Mold Tough Firecode Core Gypsum Panels by USG.
      c. XP Wallboard by National Gypsum.
      d. Or equal.

2.4 TRIM ACCESSORIES

A. Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:
      a. Cornerbead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.
      g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim and Reveal: As specified in Division 9 Section "Portland Cement Plaster".

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Acoustical Sealant: Sheetrock Acoustical Sealant by USG or equal.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

D. Thermal and Acoustical Insulation: As specified in Division 7 Section "Building Insulation."

E. Gypsum Board Adhesives:
   1. High performance latex-based construction adhesive designed for gypsum board applications.
   2. Adhesives shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.
   3. Products:
      a. Green Series SW-325 Shear & Drywall Adhesive by OSI.
      b. Drywall Adhesive GDWA by Grabberman.
      c. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners, unless otherwise indicated.
   2. LC-Bead: Use at exposed panel edges.
   3. L-Bead: Use where indicated.
   4. U-Bead: Use at exposed panel edges.
   5. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.4 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Comply with GA 214 for Level definitions.
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for ceramic tile or acoustical tile.
   3. Level 3: Where indicated on Drawings.
   4. Level 4: At panel surfaces that will be exposed to view with flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.
   5. Level 5: At panel surfaces that will be exposed to view with non-flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Ceramic tile.
   2. Cementitious backer units installed as part of tile installations.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
   1. Propose locations of expansion, contraction, control, and isolation joints if not indicated on Drawings.

C. Installation Method: Show TCA installation method number for each tiled area in tabulated form.

D. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

E. Product Certificates: For each type of product, signed by product manufacturer.

F. Qualification Data: For Installer.

G. Material Test Reports: For each tile-setting and -grouting product.

1.5 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.
   1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

D. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of ceramic tile and accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceramic Tile: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Daltile; Div. of Dal-Tile International Inc.
   2. Crossville Ceramics Company, L.P.
   3. Interceramic.
   4. Bedrosians.
   5. Emser Tile.
   6. Or equal.

B. Setting, Grouting Materials: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Custom Building Products.
   2. LATICRETE International Inc.
   3. MAPEI Corporation.
   4. Sienna.
   5. Tec by H.B. Fuller.
   6. Or equal.

C. Sheet Waterproofing for Tile Installation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Noble Company (The); Nobleseal TS. (Basis of Design)
   2. Schluter; KERDI XL.
   3. Or equal.

D. Cementitious Backer Board: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. USG Corporation; DUROCK Cement Board.
   2. National Gypsum Company; PermaBase.
   3. C-Cure; C-Cure Board 990.
   4. Custom Building Products; Wonderboard.
   5. Or equal.

E. Metal Edge Strips and Transitions: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Schluter Systems (Basis of Design).
   2. Blanke.
   3. Or equal.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

C. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 TILE PRODUCTS

A. Semi-Gloss Ceramic Wall Tile: Semi Gloss Series.

B. Color: As selected by Architect from manufacturer’s full range.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
   1. Vendor: White Georgia Marble Co.
   2. Description: Match Architect's sample.

2.5 SHEET WATERPROOFING FOR TILE INSTALLATIONS

A. General: Manufacturer's standard product that complies with ANSI A118.10.

B. Thin (1/32 inch) bonded, load bearing sheet membrane for waterproofing. Alloy made from Chlorinated Polyethylene (CPE) with nonwoven fabric laminated to both sides.
   1. System Performance: 1-14 “Extra Heavy Service” cycles per ASTM C627.
   2. Hardness: 82 shore A per ASTM D2240.
   3. Tensile Strength: 1600 psi per ASTM D412 Die C.
   4. Elongation: 44% per ASTM D412 Die C.
   5. Tear Strength: 400 psi per ASTM D624 Die C.
   6. Shear Strength: Pass per ANSI A118.10-1993.
   7. Shear Strength - Water Immersion: Pass per ANSI A118.10-1993.
   8. Fungus & microorganism Resistance: Pass per ANSI A118.10-1993.
   9. Seam Strength: Pass per ANSI A118.10-1993.
   10. Waterproofness: Pass per ANSI A118.10-1993.

C. Product: Ditra XL System by Schluter or equal.

1. Description: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on underside; 5/16-inch nominal thickness.
2. Accessories:
   a. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness. Kerdi-Band and Kerdi-Flex by Schluter or equal.

2.6 SETTING AND GROUTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:
   1. Prepackaged dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive.
      a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
   2. Products:
      a. MAPEI: Ultraflex 2, Walls: MAPEI Ultralite.
      b. 254 Platinum by Laticrete.
      c. Custom Building Products: MegaFlex.
      d. Or equal.

B. Chemical-Resistant, Water-Cleanable, Grouting Epoxy: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   1. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F and 212 deg F, respectively, and certified by manufacturer for intended use.
   2. Products:
      a. MAPEI: Kerapoxy IEG.
      b. SpectraLock Pro by Laticrete.
      c. Custom Building Products: 100% Solids Epoxy Grout.
      d. Or equal.

2.7 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section "Joint Sealants."
   1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.8 TILE BACKER UNITS

A. Cementitious Back Units:
   1. Aggregated portland cement board with coated glass-mesh reinforcement scrim.
   2. Comply with ANSI A118.9.
   3. Pass ASTM E136 for non-combustibility.

4. Thickness: As indicated on Drawings.
5. Lengths: Maximum lengths available to minimize end-to-end butt joints.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.10 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
      a. Sub-floor and Vertical Surfaces: 1/4 inch in 10 feet.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
   1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
   2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Locate joints in tile surfaces directly above joints in concrete substrates.

G. Grout tile to comply with requirements of the following tile installation standards:
   1. For chemical-resistant epoxy grouts, comply with ANSI A108.6.

3.4 CEMENTITIOUS BACKER UNIT INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 WATERPROOFING INSTALLATION

A. Do not install tile over waterproofing until waterproofing has been tested to determine that it is watertight.

3.6 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

B. Joint Widths: 1/16 inch unless specified otherwise.

3.7 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

3.8 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove epoxy grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.9 WALL TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior wall installation over cementitious backer units; thin-set mortar; TCA W244C-07 with epoxy grout and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

3.10 FLOOR TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior floor installation on waterproof membrane over concrete; thin-set mortar; TCNA F122 and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

END OF SECTION 093000

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes acoustical tiles for ceilings and the following:
   1. Direct attachment of tiles to substrates with adhesive.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light-Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For components with factory-applied color finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
   1. Acoustical Tile: Set of full-size Samples of each type, color, pattern, and texture.
   2. Concealed Suspension System Members: 12-inch- long Sample of each type.
   3. Exposed Moldings and Trim: Set of 12-inch- long Samples of each type and color.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical tile ceiling.

E. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:
1. Surface-Burning Characteristics: Provide acoustical tile with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
a. Smoke-Developed Index: 450 or less.
b. Flame-Spread Classification: CBC 802.2 and Table 8-A.
1) Flame-Spread Rating: Class 1 (0-25).

D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand meeting the requirements of ASCE 7 Section 13.5.6.2 as modified by 2019 CBC Section 1617A.1.21.

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical tile ceilings that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acoustical Tiles: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. USG Interiors, Inc. (District Standard)

2.2 ACOUSTICAL TILES, GENERAL

A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
   1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

D. Antimicrobial Fungicide Treatment: Provide acoustical tiles with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

A. Products: Match existing acoustical panels as approved by Architect.

2.4 MISCELLANEOUS MATERIALS

A. Tile Adhesive: Type recommended by tile manufacturer, bearing UL label for Class 0-25 flame spread.
   1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, DIRECTLY ATTACHED ACOUSTICAL TILE CEILINGS

A. Adhesive Installation: Install acoustical tile by bonding to substrate, using amount of adhesive and procedure recommended in writing by tile manufacturer, CISCA Ceiling System Handbook and as follows:
   1. Remove loose dust from backs of tiles by brushing and prime them with a thin coat of adhesive.
   2. Install splines in joints between tiles; maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet and not exceeding 1/4 inch cumulatively.
   3. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.
   4. Do not bend tile during installation. The "spring load" will cause the adhesive to release.

B. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.

C. Arrange directionally patterned acoustical tiles as follows:
   1. As indicated on reflected ceiling plans.

3.4 CLEANING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Luxury Vinyl Tile (LVT).
   2. Resilient wall base and accessories.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for concrete surface testing.
   2. Division 7 Section “Concrete Moisture and Alkalinity Barrier” for concrete surface preparation.

1.3 PERFORMANCE REQUIREMENTS

A. Accessibility Requirements for Resilient Flooring:
   1. Resilient Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include concrete moisture and alkalinity limits.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification:
   1. Full-size units of each color and pattern of resilient floor tile required.
   2. Resilient Wall Base and Accessories: Manufacturer's standard-size Samples, but not less than 12 inches long, of each resilient product color and pattern required.

D. Maintenance Data: For resilient products to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store tiles on flat surfaces.

1.7 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

E. Install resilient products after other finishing operations, including painting, have been completed.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of resilient floor tile that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
   2. Resilient Wall Base and Accessories: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Luxury Vinyl Tile (LVT): Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Mohawk Group. (District Standard)

B. Type TP Resilient Wall Base: Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
   1. Johnsonite. (Basis of Design)
   2. Burke Mercer Flooring Products.
   3. Allstate Rubber.
   4. Armstrong.
   5. Or equal.

2.2 LUXURY VINYL TILE (LVT)

A. Product: Mohawk or equal.
   1. Collection and Style: As indicated on Drawings.
   2. Construction: Commercial luxury vinyl tileclass / ASTM F1700 class III, type B.
   3. Edge profile: square.
   4. Installation: direct glue.
   5. Recommended adhesive: Shaw 4100, s150 or Shaw 4151.
   6. Performance and Testing:
      a. Static load (ASTM F970): Passes (modified), *1000 PSI.
      b. Residual indentation (ASTM F1914): Passes.
      c. Resistance to heat (ASTM F1514): Passes.
      d. Resistance to light (ASTM F1515): Passes.
      e. Resistance to chemicals (ASTM F925): Passes.
      f. Smoke density (ASTM E662, flaming mode): Passes.
      g. Radiant panel (ASTM E648): Passes, class I.

2.3 RESILIENT WALL BASE

A. Product: Type TP Perceptions Resilient Wall Base by Johnsonite or equal.
   1. Manufactured from a proprietary thermoplastic rubber formulation.
   2. Meets performance requirements for ASTM F 1861 Standard Specification for Resilient Wall Base, Type TP, Group 1.
   3. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm2 or greater, Class I.
   4. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class A, Smoke <450.
   5. Thickness: 1/8" (3.2mm).
   6. Style and Colors: As selected by Architect from manufacturer's full range.

2.4 RESILIENT MOLDING ACCESSORY

A. Types:
   1. Reducer strip for resilient floor covering
   2. Joiner for tile and carpet.

B. Material: Rubber.

C. Profile and Dimensions: As indicated.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed resilient tile and as recommended/ required by the manufacturer for warrantee acceptance or provided by resilient tile manufacturer for the type of carpet being installed.
   1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. VCT and Asphalt Tile Adhesives: 50 g/L.
      b. Cove Base Adhesives: 50 g/L.
      c. Rubber Floor Adhesives: 60 g/L.

C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Concrete Substrates:

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Independent moisture and alkalinity testing prior to installation of resilient flooring as specified in Division 7 Section "Concrete Moisture and Alkalinity Testing".
3. Provide barrier as specified in Division 7 Section "Concrete Moisture and Alkalinity Barrier" if test exceed floor covering limits.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
1. Do not install resilient products until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

D. Extend tiles into toe spaces, door reveals, closets, and similar openings.

E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

F. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
   2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.5 RESILIENT ACCESSORY INSTALLATION

A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.6 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.
      a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
   1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
      a. Use commercially available product acceptable to manufacturer.
   2. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 096519

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Surface Preparation.
   2. Field application of paints, stains, varnishes, and other coatings.

1.3 SUBMITTALS

A. Product data - Submit product data sheets for each product.

B. Samples:
   1. Submit two painted samples, illustrating selected colors and textures for each color and systems selected with specified coats cascaded.
   2. Submit on suitable backing, 8x10 inch size.

1.4 QUALITY ASSURANCE

A. Painting Contractor is required to attend a pre-construction meeting with the District prior to commencement of all projects.

1.5 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

C. Environment Requirements:
   1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.
   2. Do not paint when there is a threat of rain within 24 hours or when surface or air temperatures are at or below 40 degrees.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace paint that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

1.8 EXTRA STOCK

A. Minimum 1 gallon each product in original or new 1 gallon cans.
   1. Color spot each lid.
   2. Identify with formula, location, product and date.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paints: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vista Paint. (District Standard)

2.2 PAINTS AND COATINGS

A. Ready mixed, except field-catalyzed coatings.

B. Prepare pigments:
   1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogenous coating.
   2. For good flow and brushing properties.
   3. Capable of drying or curing free of streaks or sags.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Do not proceed unless substrate is suitable.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent
   3. Interior Wood: 15 percent, measured in accordance with ASTMD4442.
   4. Exterior Wood: 15 percent, measured in accordance with ASTMD4442.

3.2 PREPARATION OF SURFACE

A. General:
   1. Clean all exterior walls and surfaces of loose and scaly paint, dirt, dust, chalk, and other foreign matter by water-blasting using care not to damage substrate followed by hand scraping, sanding or wire brushing after surfaces are dry. Mildew must be treated with household bleach solution and rinsed thoroughly.
   2. Patch, caulk, set protruding nails and repair all surfaces and cracks where necessary with suitable patching materials and smooth off to match adjacent surfaces.
   3. Sand Glossy surfaces to dull surface and remove residue.
   4. Remove mildew from affected surfaces with a solution of Tri-Sodium Phosphate and bleach. Rinse with clean water and allow to dry completely.
   5. Existing surfaces to be recoated shall be thoroughly cleaned and de-glossed by sanding or other means prior to priming and painting. Patched and bare areas shall be spot primed with the same primer as specified for new work.
   6. Rusty metal: Scrape, sand or wire wheel, feathering edges to sound coating. Dust surfaces. Topcoat.
   7. Remove soil and body oils completely from surfaces, including handrails, door edges and posts. Treat with Liquid Sandpaper or Dull-N-Bond.
   8. Remove hardware, accessories, plates, fixtures and similar items not to be finished. Reinstall at completion.
   9. Paint edges of sink cut-outs.

B. CMU Surfaces:
   1. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete block surfaces which are to be painted.
   2. Unpainted CMU surfaces shall be cleaned with TSP. Rinse thoroughly. Surface shall be tested for adhesion. Prime as listed in materials section; allow to cure, then perform adhesion test with duct tape.

C. Galvanized Surfaces: Remove all oils and contamination from galvanized surfaces scheduled to be painted by washing with a compliant solvent wash.

D. Ferrous Metal: Remove grease, rust, scale, dirt and dust from ferrous metal surfaces. Primer coat shall be applied not less than 30 minutes, nor more than 3 hours after preparation of surface.

E. Primed Metal: Sand and scrape shop primed metal to remove loose primer and rust. Touch-up bare, abraded and damaged areas with metal primer. Feather edges to make touch-up patches inconspicuous.

F. Wood Surfaces:
   1. Remove dust, grit and foreign matter from wood surfaces. Sand surfaces and dust clean. Spot prime knots, pitch streaks and sappy sections with a stain blocking primer where surfaces are to be painted. Fill nail holes, cracks and other defects after priming and spot prime repairs after patching material has fully cured.
   2. Wood surfaces with peeling areas are to have edges of broken paint film sanded to a feather edge.
   3. Back prime wood trim. Paint tops, bottoms, edges and cut-outs of doors.

G. Plaster Surfaces:
   1. Plaster surfaces shall be dry and free from efflorescence, encrustations and foreign matter. Fill cracks, holes and imperfections, smoothing repairs to match adjacent texture. Allow repairs to fully cure before priming.
   2. Prime plaster surfaces with specified primer. Caulk all cracks.

H. Gypsum Board: Gypsum board shall be dusted clean and free from encrustations and other foreign matter.

I. Preparation of other surfaces shall be performed following specific recommendations of the coating manufacturer.

3.3 PREVISOUSLY COATED SURFACES

A. Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required per ASTM D4259.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved

E. Sand wood surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust particles just prior to applying next coat.

G. Stipple all edges and corners to conceal brush marks.

H. Paint entire trim element with like color. Painting of faces only is unacceptable. Trim surfaces must be wrapped with the trim color and not "faced off" or "Hollywooded".

I. Doors: Paint entire door unless otherwise noted, including door top and bottom edge surfaces.

J. Tinting: Tint each primer a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint primer to match the color of the finish coat, but provide sufficient differences in shade of primer to distinguish each separate coat.

3.5 PROTECTION

A. Protect work of other trades and items not intended to receive paint. Install "wet paint" signs to protect newly painted surfaces.

3.6 CLEANING

A. Protection - Carefully protect areas where work is in progress from damage.
   1. Provide and spread clean drop cloths when and where required to provide the necessary protection.
   2. Immediately clean-up all accidental spatter, spillage, misplaced paint and restore the affected surface to its original condition.

B. Clean-up:
   1. Clean up debris daily per OSHA requirements.
   2. At completion of work, remove all materials, supplies, debris and rubbish and leave each area in a clean, acceptable condition.
   3. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.7 SURFACES TO BE FINISHED

A. Paint all new work and areas affected by new work, unless noted otherwise.

B. Do not paint or finish the following items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.

C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint shop primed items occurring in finished areas.
   3. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint.
   4. Paint dampers exposed behind louvers, grilles and convector and baseboard cabinets to match face panels.

3.8 PAINT SYSTEMS – EXTERIOR

A. CONCRETE – PLASTER – STUCCO
   1. FLAT: Premium Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 3000 Acribond (100% Acrylic Solid Stain)
      c. Third Coat 3000 Acribond (100% Acrylic Solid Stain)
   2. FLAT ELASTOMERIC: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 500 Solotex Multi-Mil Acrylic Elastomeric
      c. Third Coat 500 Solotex Multi-Mil Acrylic Elastomeric
   3. EGGSHELL ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
   4. SEMI-GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
      c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   5. GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8500 Carefree Gloss (100% Acrylic)
      c. Third Coat 8500 Carefree Gloss (100% Acrylic)

B. METAL: FERROUS (Unprimed)
   1. FLAT: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 2000 Duratone (100% Acrylic)
      c. Third Coat 2000 Duratone (100% Acrylic)
   2. EGGSHELL ENAMEL : Water-based Acrylic : Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat 8300 Carefree Eggshell (100% Acrylic)
   3. EGGSHELL ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
      a. First Coat 9600 Protec Metal Primer
      b. Second Coat 9700 Protec Alkyd Emulsion Satin
      c. Third Coat 9700 Protec Alkyd Emulsion Satin
   4. SEMI-GLOSS ENAMEL: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)

c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)

5. SEMI-GLOSS ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9800 Protec Alkyd Emulsion Semi-Gloss
   c. Third Coat 9800 Protec Alkyd Emulsion Semi-Gloss
6. GLOSS ENAMEL : Water-based Acrylic: Premium Plus Quality
   a. First Coat 9600 Protec Metal Prime
   b. Second Coat 8500 Carefree Gloss (100% Acrylic)
   c. Third Coat 8500 Carefree Gloss (100% Acrylic)
7. GLOSS ENAMEL : Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9900 Protec Alkyd Emulsion Gloss
   c. Third Coat 9900 Protec Alkyd Emulsion Gloss

C. METAL: NON-FERROUS (Unprimed)
1. FLAT: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 2000 Duratone (100% Acrylic)
   d. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   d. Third Coat 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   d. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8500 Carefree Gloss (100% Acrylic)
   d. Third Coat 8500 Carefree Gloss (100% Acrylic)

D. WOOD
1. FLAT: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 2000 Duratone (100% Acrylic)
   c. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS ENAMEL: Premium Plus Quality

a. First Coat 4200 Terminator II (100% Acrylic Primer)
b. Second Coat 8500 Carefree Gloss (100% Acrylic)
c. Third Coat 8500 Carefree Gloss (100% Acrylic)

E. CONCRETE – ASPHALT – LINE STRIPING
1. FLAT:
a. First Coat 6700 ON-LINE Flat Traffic Marking Paint
b. Second Coat 6700 ON-LINE Flat Traffic Marking Paint
2. SEMI-GLOSS ENAMEL:
a. First Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
b. Second Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
3. FLAT W/ REFLECTIVE BEADS: QUICK-DRY
a. First Coat 6900 ON-LINE Flat QD Traffic Marking Paint
b. Second Coat 6900 ON-LINE Flat QD Traffic Marking Paint

3.9 PAINT SYSTEMS – INTERIOR (Premium Low or Zero VOC)

A. Gypsum Board Surfaces (Drywall) Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

B. Gypsum Board Surfaces (Drywall) 100% Acrylic Low-Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

C. Gypsum Board Surfaces (Drywall) 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

D. Gypsum Board Surfaces (Drywall) 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

E. Concrete, Plaster, Masonry – Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

F. Concrete, Plaster, Masonry – 100% Acrylic Low Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

G. Concrete, Plaster, Masonry – 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer

2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

H. Concrete, Plaster, Masonry – 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

I. Concrete Masonry Unit (CMU) Acrylic Flat Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

J. Concrete Masonry Unit (CMU) 100% Acrylic Low Sheen Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

K. Concrete Masonry Unit (CMU) 100% Acrylic Eggshell Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

L. Concrete Masonry Unit (CMU) 100% Acrylic Semi-Gloss Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

M. Wood – 100% Acrylic Low-Sheen Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

N. Wood – 100% Acrylic Eggshell Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

O. Wood – 100% Acrylic Semi-Gloss Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

P. Metal: Ferrous – Water Base Alkyd Semi-Gloss Finish
1. First Coat: 9600 Protec Alkyd Emulsion Metal Primer
2. Second Coat: 9800 Protec Semi-Gloss Finish
3. Third Coat: 9800 Protec Semi-Gloss Finish

Q. Metal: Non-Ferrous (Galvanized) Water Base Alkyd Semi-Gloss Finish
1. Pretreatment: Krud Kutter Metal Clean and Etch

2. First Coat: 4800 Metal Pro Acrylic Metal Primer
3. Second Coat: 9800 Protec Semi-Gloss Finish
4. Third Coat: 9800 Protec Semi-Gloss Finish

3.10 COLORS

A. To be selected by Architect from manufacturer's full range of colors.

END OF SECTION 099100

DIVISION 10

SPECIALTIES

SECTION 101100 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Markerboards.
   2. Tackboards.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Show location of panel joints.
   2. Show location of special-purpose graphics for visual display surfaces.
   3. Include sections of typical trim members.

C. Schedule: List product, size, and type by room numbers.

D. Samples for Initial Selection: For each type of visual display surface indicated and as follows:
   1. Actual sections of face sheet and tack assembly.
   2. Samples of accessories involving color selection.

E. Samples for Verification: For each type of visual display surface indicated and as follows:
   1. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
   2. Trim: 6-inch- long sections of each trim profile.
   3. Accessories: Full-size Sample of each type of accessory.

F. Maintenance Data: For visual display surfaces to include in maintenance manuals.

G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of visual display surfaces and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

B. Fire-Test-Response Characteristics: Provide fabrics with the surface-burning characteristics indicated, as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-built visual display boards, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store visual display units vertically with packing materials between each unit.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating visual display surfaces without field measurements. Coordinate wall construction to ensure that actual dimensions correspond to established dimensions.
   2. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.7 WARRANTY

A. Special Warranty for Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace face sheets that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Surfaces lose original writing and erasing qualities.
      b. Surfaces become slick or shiny.
      c. Surfaces exhibit crazing, cracking, or flaking.
   2. Warranty Period: Life of the building.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Markerboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. LCS Markerboard by Claridge Products & Equipment, Inc. (Basis of Design).
   2. 555 Series, P3 ceramic steel by Polyvision Corporation.
   3. Magnaboard by Chatfield Clarke Co.
   4. Modular Trim System by Platinum Visual Systems.
   5. A-1 Visual Systems.
   6. Best-Rite.
   7. Or equal.

B. Tackboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Koroseal. (District Standard)

2.2 MARKERBOARDS

A. Product: Markerboard by Claridge Products & Equipment, Inc.
   1. Face Sheet: 24 gauge, white.
      a. LCS-II, 75 low gloss; dry-erase markers wipe clean with dry cloth or standard eraser. Suitable for use as projection screen.
   2. Core Material: 7/16” MDF unless fire retardant materials are required, then provide 7/16 inch Duracore.
   3. Panel Backing: Moisture barrier back; 0.002” Aluminum Foil Panel.
   4. Metal Frame/Trim: Series #4, 5/8 inch trim face.
      a. Extruded aluminum, alloy 6063, clear anodized finish.
      b. Trim for three sides: Side trim with narrow leg exposed and mitered at corners.
      c. Chalk trough: Outer end corners rounded to approximately 1-1/2 inches radius.
   5. Size: As indicated on Drawings.
   6. Maprail: 74EZ, 2 inch.

2.3 TACK BOARD

A. Product: tac•wall by Koroseal or equal.
   1. Description: Resilient, tackable, linoleum surface material. Uni-color resilient homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing.
   2. Width: 48 inch.
   3. Gauge: 1/4 inch.
   4. Roll: Approximately ± 95 lineal foot rolls.
   5. Flexible enough to bend around a 2-3/4 inch radius.
   6. Dimensionally stable due to burlap backing.
   7. Meets California Indoor Air Quality Specifications 01350.
   8. Color: Color shall extend through thickness of material.

a. As selected by Architect from manufacturer's full range.
9. Size: As indicated on Drawings.

B. Aluminum Trim: 1/4 inch clear satin, anodized aluminum.
1. 5/16 inch face J Trim.
2. 1/2 inch face H Trim.
3. 5/16 inch face Outside Trim.
4. 5/16 inch face Inside Trim

C. Accessories:
1. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) or polyvinyl acetate dispersion type (contact adhesive) when used in a press.
2. Caulk: Color matched to tackable wall.

2.4 ACCESSORIES

A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- thick, extruded aluminum; of size and shape indicated.
1. Factory-Applied Trim: Manufacturer's standard.

B. Chalktray: Manufacturer's standard, continuous.
1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.

C. Map Rail: Provide the following accessories:
1. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches wide.
2. End Stops: Located at each end of map rail.
3. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches of map rail or fraction thereof.
4. Flag Holder: One for each room.

2.5 FABRICATION

A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.

B. Visual Display Boards: Factory assemble visual display boards, unless otherwise indicated.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.

3. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

D. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to neat, hairline closure.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.6 ALUMINUM FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

D. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Examine walls and partitions for proper backing for visual display surfaces.

C. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.

B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.

3.3 INSTALLATION, GENERAL

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation. Units shall be braced in place to allow curing of adhesive. There shall be no gaps or voids in adhesion and units shall not give when pushed.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

A. Visual Display Boards: Visual Display Boards shall be attached to the wall by spreading adhesive over the entire back of the panel with 1/4 inch notched trowel. Panels shall be braced to provide thorough adhesion to the substrate, and shall exhibit no “sponginess” when pressed.

3.5 CLEANING AND PROTECTION

A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 101100

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Panel signs (room signs).
   2. Parking signs.
   3. Traffic signs.
   4. Exterior building signs.
   5. Signage accessories.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Raised characters shall comply with CBC Section 11B-703.2.:
      a. Depth: It shall be 1/32 inch (0.8 mm) minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
      b. Height: It shall be 5/8 inch (15.9 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter “I”. CBC Section 11B-703.2.5.
      c. Finish and contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1
      d. Proportions: It shall be selected from fonts where the width of the uppercase letter “O” is 60 % minimum and 110 % maximum of the height of the uppercase letter “I”. Stroke thickness of the uppercase letter “I” shall be 15 % maximum of the height of the character. CBC Sections 11B-703.2.4.
      e. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8.
      f. Braille: It shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4. Braille dots shall have a domed and rounded shape and shall comply with CBC Table and Figure 11B-703.3.1.
      g. Mounting height: A tactile sign shall be located 48” minimum to the baseline of the lowest Braille cells and 60” maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
      h. Mounting location: A tactile sign shall be located on the approach side, as one enters or exits rooms or space, and be reached within 0” of the required clear floor space per CBC Section and Figure 11B -703.4.2 as follows:

1) a clear floor space of 18' x 18" minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
2) on the wall at the latch side of a single door.
3) on the inactive leaf of a double door with one active leaf.
4) on the wall at the right side of a double door with two active leafs.
5) on the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leafs.

2. Visual characters shall comply with CBC Section 11B-703.5 and shall be 40" minimum above finish floor or ground.
3. Pictograms shall comply with CBC Section 11B-703.6.
4. Symbol of accessibility shall comply with CBC Section 11B-703.7.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
1. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.

D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:
1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will not be returned for installation into Project.

E. Qualification Data: For Installer.

F. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.

B. Source Limitations: Obtain each sign type through one source from a single manufacturer.

C. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

D. All tactile signage must be field inspected after installation per CBC 11B-703.1.1.2.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
   1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signage fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Best Sign Systems Inc. (Basis of Design)
   2. Apco Graphics Inc.
   3. ASI Sign Systems, Inc.
   4. Curcio Enterprises, Inc.
   5. Mohawk Sign Systems.
   6. Sign A Rama.
   7. Or equal.

B. Exterior Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Gemini, Inc. (Basis of Design)
   2. A.R.K. Ramos Mfg. Co., Inc.
   3. La Haye Bronze.
   4. Metal Arts; Division of L & H Mfg.
   5. Mills Manufacturing. Inc.
   6. Southwell Co.
   7. Or equal.

2.2 PANEL ROOM SIGNS

A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
   1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.

B. Product: HC300 ADA Sign System by Best Sign Systems.
   1. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished.
   2. No Smoking signs.
   3. Room, Occupancy, Wayfinding Signs: As selected from 4 standard copy size signs.
      a. 4" x 2" with up to 4 characters each.
      b. 6" x 2" with up to 8 characters each.
      c. 8" x 2" with up to 12 characters each.
      d. 10" x 2" with up to 14 characters each.
   4. Toilet Room Signs: As selected from manufacturer's standard.
   5. Symbols of Accessibility: Provide 6-inch- high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.
   6. Material:
      a. 1/4 inch thick (thicker than standard) "MP", acrylic sheet, ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
   7. Copy: Contracted grade 2 Braille all capital letter on tactile sign.
      a. Font and Size: As indicated on Drawings.

2.3 PARKING/TRAFFIC SIGNS

A. Material: 0.080" porcelain-enameled aluminum unframed signs, screen printed copy.

B. Accessible signs are blue with white symbol.
   1. Text: Symbols of accessibility, accessible direction, etc. as indicated on Drawings.
   2. Text: Stop, Yield, Do Not Enter, etc. as indicated on Drawings.

C. Post: 2 inch diameter, schedule 40 galvanized pipe.

2.4 EXTERIOR BUILDING SIGN

A. Cast metal letters: Melted metal alloy poured into a mold. The backside is hollow.

B. Size and letters: As indicated on Drawings.

2.5 ACCESSORIES

A. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
   2. Signs placed on glazed surfaces, backing sign of the same material and color shall be applied on the opposite glazed surface.

B. Wall-Mounted Panel Signs:
   1. Interior Signs on Smooth Substrates:
      a. Silicone-Adhesive Mounting: Use liquid-silicone adhesive recommended in writing by sign manufacturer to attach signs to irregular, porous, or vinyl-covered surfaces.

Use double-sided vinyl tape where recommended in writing by sign manufacturer to hold sign in place until adhesive has fully cured.

2. Exterior and Interior Signs on Rough Substrates:
   a. Mechanical Fasteners: Mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
      1) Fastener: Stainless steel screws, tamper-resistant flat head countersink.
      2) Anchors: Suitable for secure attachment to substrate.

C. Parking and Traffic Signs
   1. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
   2. Install sign level, plumb, and at height indicated.
   3. Cap post with galvanized cap.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by District.

END OF SECTION 101400

SECTION 102800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Toilet accessories.

B. Owner-Furnished Contractor Install Materials: As indicated on Drawings.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Elements of Sanitary facilities shall be mounted at locations in compliance with CBC Sections 11B-602 through 11B-612.
   2. Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609.
   3. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follows:
      a. 1-1/2” between the grab bar and the wall.
      b. 1-1/2” minimum between the grab bar and projecting objects below and at the ends.
      c. 12” minimum between the grab bar and projecting objects above.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated on Drawings.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in California Electrical Code, NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace toilet and bath accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Toilet and Bath Accessories: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Bobrick Washroom Equipment, Inc. (District Standard)

B. Underlavatory Guards: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Handy-Shield by Plumberex Specialty Products, Inc. (Basis of Design)
   2. IPS Corp.
   3. TCI Products.
   4. Truebro, Inc.
   5. Or equal.

2.2 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.

C. Galvanized Steel Sheet: ASTM A 653, with G60 hot-dip zinc coating.

D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.3 TOILET ACCESSORIES

A. As indicated on Drawings.

2.4 UNDERLAVATORY GUARDS

A. Product: Handy-Shield Maxx by Plumberex Specialty Products, Inc. or equal.
   1. Description: Insulating pipe covering for supply and drain piping assemblies, that prevent direct contact with and burns from piping, and allow service access without removing coverings.
   2. PVC insulator shall be 1/8" thick.
   3. Meets Testing Standard ASTM E 84-07 per CBC Chapter 8.
      a. 25 flame spread.
      b. 450 smoke index.
   4. Surfaces to be soft, smooth, non-absorbent, easy to clean U/V inhibited, antimicrobial, antifungal properties.
   5. Insulator shall have a dual fastening system which consists of fusion bonded Velcro fastener strips for full slit enclosure and tamper resistant, smooth, non-abrasive snap-locking fasteners.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate OFCI items with District.

B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

C. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 104400 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable fire extinguishers.
   2. Fire-protection cabinets for the following:
      a. Portable fire extinguishers.
   3. Mounting brackets for fire extinguishers.

1.3 SYSTEM DESCRIPTION

A. Fire Extinguisher Cabinets:
   1. Fire Extinguisher Cabinets must comply with CBC Sections11B-305, 11B-307, 11B-308, and 11B-309.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.
   1. Fire Extinguishers: Include rating and classification.
   2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Samples for Initial Selection: For fire-protection cabinets with factory-applied color finishes.

C. Samples for Verification: For each type of exposed factory-applied color finish required for fire-protection cabinets, prepared on Samples of size indicated below.
   1. Size: 6 by 6 inches square.

D. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10-1998 Edition, "Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
   1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure of hydrostatic test according to NFPA 10.
      b. Faulty operation of valves or release levers.
   2. Warranty Period: 6 years.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fire Extinguishers and Cabinets: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. JL Industries, Inc. (Basis of Design)
   2. Larsen's Manufacturing Company.
   3. Potter Roemer; Div. of Smith Industries, Inc.
   4. Ansul.
   5. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B.

B. Stainless-Steel Sheet: ASTM A 666, Type 304.

C. Tempered Break Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick minimum.

2.3 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
   1. Valves: Manufacturer's standard.
   2. Handles and Levers: Manufacturer's standard.
   3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
   4. Certification Tag: Provide fire extinguisher with valid certification test tag where fire extinguishers are fully charged and ready to be used.

B. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-10B:C, UL rated.
   2. Nominal Capacity: Provide largest capacity fire extinguisher that will fit in the cabinet, but 5 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: General purpose.

C. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-20B:C.
   2. Nominal Capacity: Provide largest capacity fire extinguisher but 10 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: At mechanical rooms and where indicated.

D. Wet Chemical Type: Cast steel tank, pressurized, including hose and nozzle, with bracket.
   1. Class 2A-K.
   2. Size 2.5 gal.
   3. Finish: Factory baked enamel, red color.
   4. Use: At kitchens.

2.4 FIRE-PROTECTION CABINET

A. Product: Cosmopolitan series - stainless steel fire extinguisher cabinet by JL.
   1. Door and Trim Construction: No. 4 stainless steel. Flush cabinet doors with a 5/8" door stop are attached by a continuous hinge and equipped with zinc-plated handle and roller catch.
   2. Trim Style and Depth: Provide semi-recessed where recessed can’t be provided.
      a. Recessed: 3/8" flat trim.
      b. Semi-Recessed: 1-1/4", 1-1/2" Square Edge or 2-1/2", 3", 4" (recessed pull), 4-1/2" Rolled Edge.
   3. Finish: #4 Stainless Steel.
   4. Tub: Constructed of cold rolled steel with white powder-coat finish standard. Surface mount tubs are No 4 stainless.
   5. Fire-Rated: At fire-rated assembly.
   6. Door Styles: View Door Styles at Right.
   7. Door Glazing: Tempered Glass.

2.5 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   1. Color: Red.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter.
      a. Orientation: Vertical.

2.6 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
   1. Weld joints and grind smooth.
   2. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material.
      a. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
   1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
   2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 STAINLESS-STEEL FINISHES

A. General: Remove tool and die marks and stretch lines or blend into finish.
   1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Bright, Directional Polish: No. 4 finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where cabinets will be installed.

B. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged units.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for recessed and semi-recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights indicated on Drawings.

B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
   1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire-protection cabinets.
   2. Provide inside latch and lock for break-glass panels.
   3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104400

DIVISION 11
EQUIPMENT

SECTION 115217 - ASSISTIVE LISTENING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable listening system.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Assistive-listening systems shall be provided in accordance with CBC Section 11B-219 and shall comply with CBC Section 11B-706.
   2. The minimum number of receivers to be provided shall be equal to 4% of the total number of seats, but in no case less than two. 25 % minimum of the receivers provided, but no less than two, shall be hearing-aid compatible in accordance with CBC Section 11B-706.3.
   3. If the system provided is limited to specific areas or seats, then such areas or seats shall be within a 50-foot viewing distance of, and have a complete view of, the stage or playing area. CBC Section 11B-219.4.
   4. Provide system with standard mono jacks; hearing aid compatible receivers with neckloop; sound pressure level 110 dB min to 118 dB max, volume control 50dB; signal-to-noise ratio min; peak clipping level max relative to peaks of speech per CBC 11B-706.

1.4 SUBMITTALS

A. Product Data: For portable listening system.

B. User manual: For transmitters and receivers.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain portable listening devices through one source from a single manufacturer.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of assistive listening devices that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Portable Listening System: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Williams Sound. (Basis of Design)
   2. Telex.
   3. Listen Technologies.
   4. Chaparral.
   5. Or equal.

2.2 PORTABLE LISTENING SYSTEM

A. Product: FM ADA Kit 37 FM ADA Compliance Kit by Williams Sound or equal.
   1. Transmitter:
      a. Battery powered and capable of being worn, 60 hours of operation with alkaline batteries, 30 hours with rechargable batteries
      b. 16 selectable channels on FM frequencies between 72 and 76 MHz
      c. Frequency Response: 200Hz to 13kHz
      d. Connector: 3.5mm accepts input from microphone and line level signals
      e. Controls: On/Off, Volume, Mute button with indicator, Channel selector
      f. Internal compression to reduce peak distortion and noise
   2. Receivers:
      a. Battery powered and capable of being worn, 50 hours of operation with alkaline batteries, 32 hours with rechargable batteries.
         1) Enters sleep mode if no RF signal detected for 6 minutes
      b. Channels: 17 between 72 and 76 MHz
         1) Unit shall have ability to lock channel to prevent accidental change of channel
      c. Deviation: 75kHz
      d. De-Emphasis: 75µS
      e. Range: AFC Range ±120kHz
      f. Sensitivity: 2µV @ 12dB Sinad with Squelch Defeated
      g. Max Input Signal: 100mV
      h. Frequency Response 200Hz - 15kHz
      i. Modulation FM, ±75kHz Peak Deviation
      j. Signal to Noise Ratio 65dB Min @ 100µV
      k. Output Level 35mW Max, Peak into 16 Ohms
      l. Connectors 3.5mm Stereo/Mono Headphone Jack
   3. Headphones: Heavy duty, folding, mono.

a. Drivers 1.6" (40 mm)
b. Plug 3.5 mm mono
c. Cord 39" (99 cm)
d. Nominal Impedance 16 Ohms
e. Frequency Response 20 Hz - 20 kHz
f. Maximum Input 100 mW
g. Sensitivity 96 dB @ 1 kHz

4. Lapel Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
5. Desktop Conference Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
6. Neckloops: designed to magnetically couple an audio signal to a telephone coil-equipped (T-Switch) hearing aid.
   a. Magnetic Field Strength: 25 mW input at 1000 Hz produces 1.7 A/m 6" above the center of loop 85µW input produces 0.1 A/m (IEC Standard)
   b. Input Power: 500 mW max
   c. Impedance 8 to 16 Ohms
   d. Connector: 3.5 mm mono mini-plug
7. System Carry Case: Heavy-duty carrying case lined with foam and capable of containing entire system.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Store portable listening system as directed by District.

3.2 DEMONSTRATION

A. Engage a factory-authorized service representative to train District's maintenance personnel to adjust, operate, and maintain portable listening system. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION 115217

DIVISION 12

FURNISHINGS

SECTION 122116 - VERTICAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Vertical louver blinds.

1.3 PERFORMANCE REQUIREMENTS

A. Operable parts and controls at unobstructed forward and side approach locate at 48" to top of device. For reach requirements at other conditions, comply with 11B-308 as they apply. Operable parts shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist and shall have a maximum operable force of 5 pounds. Operable parts shall also comply with CBC sections 11B 308.2, 11B 308.3. and 11B-309.4.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for vertical louver blinds.

C. Samples for Initial Selection: For each type of vertical louver blind indicated.
   1. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For each type of vertical louver blind indicated.
   1. Vane: Not less than 12 inches long.
   2. Vertical Louver Blind: Full-size unit, not less than 16 inches wide by 24 inches long.

E. Window Treatment Schedule: For vertical louver blinds. Use same designations indicated on Drawings.

F. Product Certificates: For each type of vertical louver blind, signed by product manufacturer.

G. Maintenance Data: For vertical louver blinds to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain vertical louver blinds through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide vertical louver blinds with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Flame-Resistance Ratings: Passes NFPA 701.

C. Product Standard: Provide vertical louver blinds complying with WCSC A 100.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver vertical louver blinds in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install vertical louver blinds until construction and wet and dirty finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where vertical louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of vertical louver blinds that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Vertical Louver Blinds: Before installation begins, for each size, color, texture, pattern, and gloss indicated, full-size units equal to 5 percent of amount installed, but no fewer than 2 units.
2. Vanes: Before installation begins, furnish quantity of full-size units equal to 5 percent of amount of each type, color, and size installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Vertical Louver Blinds:
1. Hunter Douglas.
2. Levolor, a Newell Rubbermaid Company.
3. Or equal.

2.2 VERTICAL LOUVER BLINDS, ALUMINUM VANES

A. Rail System: Headrail.
1. Rails: Extruded aluminum; long edges returned or rolled; channel-shaped, enclosing operating mechanisms.
   a. Anodized aluminum, clear anodized.
2. Wheeled Carriers: Engineered plastic with self-lubricating wheels.

B. Vanes: Aluminum, alloy, and temper recommended by producer for type of use and finish indicated; with crowned profile and not less than 3/8-inch overlap when vanes are rotated fully closed.
1. Nominal Vane Width: 3-1/2 inches wide.
2. Vane Finish: One color as indicated.

C. Vane Directional Control: Manual with nickel-plated metal bead chain.

D. Traversing Control: Manual with nickel-plated metal bead chain.

E. Louver Bottom: Connecting or spacing chains.

F. Mounting: As indicated on Drawings.

G. Stack Release: Permitting stacked vanes to be moved away from stacking position for total access to glazed opening.

H. Colors, Textures, Patterns, and Gloss: As selected by Architect from manufacturer's full range.

2.3 VERTICAL LOUVER BLIND FABRICATION

A. Product Description: Vertical louver blind consisting of equally spaced, synchronized vanes and rail system with self-aligning carrier mechanisms, carriers, traverse and vane directional mechanisms and controls, and installation hardware.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.
   1. Louver Directional and Traversing Control Mechanisms: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:
   1. Blind Units Installed between (inside) Jambs: Width equal to 1/4 inch per side or 1/2 inch total less than jamb-to-jamb dimension of opening in which each blind is installed. Length equal to 1/4 inch, plus or minus 1/8 inch, less than head-to-sill dimension of opening in which each blind is installed.

D. Installation Brackets: Designed for easy removal and reinstallation of blind, for supporting headrail and operating hardware, and for hardware position and blind mounting method indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to blind hardware and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, unless anodized or plated finish is indicated. Apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install vertical louver blinds level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior vane edges in any position are not closer than 2 inches to interior face of glass. Install intermediate support as required to prevent deflection in headrail. Allow clearances between adjacent blinds and for operating glazed opening's operation hardware, if any.

3.3 ADJUSTING

A. Adjust vertical louver blinds to operate smoothly, easily, safely and free of binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean vertical louver blind surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that vertical louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged vertical louver blinds that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122116

SECTION 126815 – FOLDING TABLES AND BENCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding table and bench seats.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Provide folding tables and bench seats with integral wall pockets with unitized understructure not requiring the tops of benches for operation.

B. Performance Requirements: Bench undercarriage shall be able to support 200 lbs. at any point when top panels are removed.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.
   1. Supply information for each type of on-wall or in-wall table/seating system specified, including detail of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Maintenance data for built-in table/seating systems, including a detailed operation and maintenance manual.

C. Shop Drawings: Show fabrication and installation of built-in table/seating, including plans, elevations, sections, details of components, profiles and finishes.

D. Samples:
   1. For initial selection in the form of manufacturer's color charts consisting of actual units or sections of the units showing the full range of colors, textures and patterns available for each exposed material involving color selection.
   2. For verification of the following items, provide samples from the same material to be used for the work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
      a. High-pressure plastic laminate.

E. Quality Assurance/Control Submittals: Submit the following:

1. Certificates: Manufacturer certification of qualifications of firms or persons specified in the "Quality Assurance" article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses of Architects and Owners as well as other information specified.

F. Closeout Submittals: Submit the following:
1. Warranty documents specified herein.

1.5 QUALITY ASSURANCE

A. Qualifications:
1. Installer Qualifications: Engage an experienced installer who has specialized in installing built-in tables and seating similar to those required for this project and who is acceptable to and certified by the manufacturer of the built-in table/seating system to perform the work of this section.
2. Welder Qualifications: Engage certified welders that have satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, have undergone recertification.

1.6 DELIVERY, STORAGE & HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature/ humidity conditions recommended by the manufacturer.

1.7 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.
1. Warranty Coverage: To include replacement or repair of any defect in the original material and workmanship, including welds, pockets, tables and benches.
2. Warranty Period: 15 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wall-Mounted Tables and Benches:
1. Mitchell Furniture Systems.(Basis of Design)
2. Palmer Hamilton

3. Biofit Engineered Products.
4. Sico.
5. Or equal.

2.2 WALL-MOUNTED TALBES AND BENCHES

A. Wall-mounted tables and benches by Mitchell or equal.
1. Model: D-08-13-2812-S.
2. Description: Double-depth in-wall, recessed mounted pockets.
3. 13’ L x 28 inches W x 29 inches H tables per in-wall pocket unit.
4. Quantity: As indicated on Drawings.
5. Top Surface: Wilsonart Laminate.
   a. Color as selected by Architect.
6. Edge Color: Black.
7. Finish: Power coat, jet black.
8. ADA seating where required.

2.3 FABRICATION

A. Comply with applicable provisions of AWS D1.1 and AWS D1.3.

PART 3 - EXECUTION

3.1 MANUFACTURER’S INSTRUCTIONS

A. Comply with the instructions and recommendations of the bench and table manufacturer.

3.2 EXAMINATION

A. Site Verification of Conditions:
1. With general contractor present, examine area where built-in tables and seating are to be installed.
2. Ensure compliance with installation tolerance requirements and other conditions affecting performance of built-in tables and seating.
3. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Protection: Protect previously installed finish materials from damage during installation of benches and tables.

B. Preparation: Make actual field measurements of construction affecting built-in tables and seating prior to fabrication and show record measurements on-shop drawings.

3.4 INSTALLATION

A. Installation must be done over a level surface with no more than a .125" (3 mm) change in height over a 10' (3 m) area.

B. Install built-in tables and seating to comply with manufacturer's instructions, shop drawings and specifications.

C. Provide accessories indicated, including anchors, fasteners, inserts, and other hardware required for installing and attaching units to adjoining construction.

D. Secure sill level on floor with flat-head screws through each hole provided by the manufacturer using lead or patent type anchors for screws in concrete floors. Install screw heads flush with sill.

E. Seven-foot center-to-center pocket mounting distance is the suggested minimum for 26" (660 mm) aisles between table/bench seats.

F. Height of finished floor must be within .0625" (1.5mm) of top of pocket sill plate. Rough floor to wall must be perpendicular in pocket mounting area.

3.5 ADJUSTING

A. Touch up shop applied finishes to restore damaged or soiled areas.

B. Lubricate, test and adjust each built-in table and seating unit to operate easily/comply with manufacturer's

3.6 CLEANING

A. After installation/adjustment: clean exposed and partially exposed surfaces on each installed built-in table, seating unit, and wall pocket. Use materials and methods recommended by manufacturer.

3.7 DEMONSTRATION

A. Demonstrate and train owner's maintenance personnel on procedures and schedules related to operation, troubleshooting, servicing, inspection, and maintenance.

3.8 PROTECTION

A. Protect installed built-in tables and seating units from damage during subsequent construction.

B. Ensures table and seating units are without damage or deterioration at the time of substantial completion.

END OF SECTION 126815

DIVISION 22

PLUMBING

SECTION 22 05 13 - COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.

6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to

have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division

except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit

detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any

part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40°C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.

E. Multispeed Motors: Separate winding for each speed.

F. Rotor: Random-wound, squirrel cage.

G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

H. Temperature Rise: Match insulation rating.

I. Insulation: Class F.

J. Code Letter Designation:
   1. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

   1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
   2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
   3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
   4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

   1. Permanent-split capacitor.
   2. Split phase.
   3. Capacitor start, inductor run.
   4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor

insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 22 05 13

SECTION 22 05 18- ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this

and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.13 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated and rough-brass finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

   a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
   b. Chrome-Plated Piping: One-piece, cast-brass type with polished, chrome-plated finish.
   c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
   d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
   e. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.
   f. Bare Piping in Equipment Rooms: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 22 05 18

SECTION 22 05 23- GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Bronze ball valves.
2. Ductile-iron, single-flange butterfly valves.
3. Bronze lift check valves.
4. Bronze swing check valves.
5. Bronze gate valves.
6. Iron gate valves
7. Manual circuit balancing valves.
8. Gas shut-off cocks.
9. LPG shut-off cocks.

B. Related Sections:

1. Division 2 water distribution piping Sections for general-duty and specialty valves for site construction piping.
2. Division 15 plumbing piping Sections for specialty valves applicable to those Sections only.
3. Division 15 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene diene terpolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Nonrising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

G. SWP: Steam working pressure.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be

neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61-G and NSF-372 for valve materials for potable-water service.

1. Valves for domestic water must comply with the Federal Reduction of Lead in Drinking Water Act.
   a. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%.
   b. All valves must be 3rd party certified.
   c. Bronze valves shall be made of dezincification-resistant material.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set angle, gate, and globe valves closed to prevent rattling.
4. Set ball and plug valves open to minimize exposure of functional surfaces.
5. Set butterfly valves closed or slightly open.
6. Block check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and

sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Piping systems shall be supplied with valves arranged so as to give complete and regulating control of each building and piping systems throughout the building, and located so all parts are easily accessible and maintained.

1. Valve Design: Rising stem or outside screw and yoke stems. Non-rising stem valves may be used where space conditions prevent full extension of rising stems.
2. Sizes: Same size as upstream pipe, unless otherwise indicated.
3. Extended stems: Where piping insulation is indicated or specified, valves shall be equipped with 2” extended handles of non-thermal conductive material. Also provide a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Supply with memory stops, which are fully adjustable after insulation is applied.
4. End Connection: 2 inch and under shall be threaded, 2-1/2 inches and larger shall be flanged or full lug style.

C. Valves for Potable Water must comply with California Lead Free Law, effective January 1, 2010.

1. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%. Source: California Health & Safety Code (116875).
2. All valves must be 3rd party certified.
3. Bronze valves shall be made with dezincification-resistant material.

D. Where possible, valves of one manufacturer shall be used.

E. Provide Class 150 valves meeting the valve specifications where Class 125 valves are specified but are not available.

F. Bronze valves shall be made with dezincification-resistant materials, (Bronze ASTM B62, B61, or B584 Alloy C87850). This includes body, ball, stem and / or trim.

G. Bronze Valves: NPS 2 and smaller with threaded ends, unless otherwise indicated.

H. Ferrous Valves: NPS 2-1/2 and larger with flanged ends, unless otherwise indicated.

I. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

J. Valve Sizes: Same as upstream piping unless otherwise indicated.

K. Valve Actuator Types:

1. Hand-wheel: For valves other than quarter-turn types.
2. Hand-lever: For quarter-turn valves NPS 6 and smaller.

L. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.

a. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Nib-seal handle extension or comparable product by one of the following:

b. General valves:

1) NIBCO
2) Hammond
3) Milwaukee

c. Below grade domestic water shut-off valves (gate valves) 2" and larger:

1) NIBCO.
2) Clow.
3) Mueller.

d. Butterfly Valves:

1) NIBCO.
2) Demco.
3) Dezuric.

e. Plug Valves:

1) Hammond.
2) Milwaukee.

f. Check valves, lift type:

1) Hammond.
2) Milwaukee.

g. Below grade backwater valve isolation valves:

1) NIBCO.
2) Clow.
3) Mueller.

2. Butterfly Valves: With extended neck.

M. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
2. Grooved: With grooves according to AWWA C606.
3. Solder Joint: With sockets according to ASME B16.18.
4. Threaded: With threads according to ASME B1.20.1.

N. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES

A. Three-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-595-Y-66-LF or T-595-Y-66-LF or a comparable product by one of the following,

a. Milwaukee Valve Company.
b. Apollo.

2. Description:

c. Standard: MSS SP-110, NSF 61-G.
d. CWP Rating: 600 psig.
e. Body Design: Three piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
f. Body Material: Bronze ASTM B 584 Alloy C87850 or C87600.

g. Ends: Threaded or Solder.
h. Seats: PTFE or TFE.
i. Stem: 316 Stainless steel.
j. Ball: 316 Stainless steel, vented.
k. Port: Full.

B. Two-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-585-66-LF or T-585-66-LF or a comparable product by one of the following:

a. Conbraco Industries, Inc.; Apollo Div.
b. Milwaukee Valve Company.

2. Description:

a. Standard: MSS SP-110, NSF 61-G.
b. CWP Rating: 600 psig.
c. Body Design: Two piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
d. Body Material: Bronze ASTM B 584 Alloy C87600.
e. Ends: Threaded or Solder.
f. Seats: PTFE or TFE.
g. Stem: 316 Stainless steel.
h. Ball: 316 Stainless steel, vented.
i. Port: Full.

C. 200 CWP, Sizes 2-1/2" – 24", Ductile Iron, Single-Flange Butterfly Valves with EPDM Seat and Aluminum-Bronze Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model LD-2000-3/5, or a comparable product by one of the following:

a. Cooper Cameron Corp.; Cooper Cameron Valves Div.
b. Tyco International, Ltd.; Tyco Valves & Controls

2. Description:

a. Standard: MSS SP-67, Type I, IAPMO.
b. NPS 24 (DN 300) and Smaller CWP Rating: 200 psig (1380 kPa).
c. Body Design: Full Lug type; Bubble tight shutoff, suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: ASTM A 536, ductile iron.
e. Seat: EPDM.
f. Stem: One- or two-piece stainless steel.
g. Disc: Aluminum bronze

D. Retain one or more of six paragraphs in this article if iron, single-flange butterfly valves are required. MSS SP-67 covers iron, single-flange butterfly valves NPS 1-1/2 to NPS 72.

2.3 BRONZE LIFT CHECK VALVES

A. Class 125, Lift Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-480-Y-LF or T-480-Y-LF or a comparable product by one of the following:

a. Hammond.
b. Milwaukee.

2. Description:

a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Vertical flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE, or TFE.

2.4 BRONZE SWING CHECK VALVES

A. Class 125, Bronze Swing Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-413-Y-LF or T-413-Y-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-80, Type 4, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Y-pattern Horizontal flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE or TFE.

2.5 BRONZE GATE VALVES

A. NRS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-113-LF or T-113-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-139, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B 584, dezincification-resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free Silicon Bronze.
f. Disc: Solid wedge; lead free bronze.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron.

B. RS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-111-LF or T-111-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves

2. Description:
a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B584 C87850 dezincification resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free silicon bronze.
f. Disc: Solid wedge, lead free bronze.
g. Packing: Asbestos free.
h. Handwhell: Malleable iron.

2.6 IRON GATE VALVES

A. Class 125, Ductile-Iron Resilient Wedge Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F-619-RWS (NRS) or F-607-RWS (OS&Y) or a comparable product by one of the following:

a. Clow
b. Mueller

2. Description:

a. Standard: AWWA C-509 and C-515,
b. CWP Rating: 300 psig.
c. Body Material: ASTM A-536 ductile iron, fusion-bonded epoxy coating inside and out.
d. Ends: Flanged.
e. Trim: stainless steel.
f. Disc: Rubber encapsulated ductile iron wedge.

g. Packing and Gasket: Asbestos free.

2.7 MANUAL CIRCUIT BALANCING VALVES

A. Bronze, Fixed Orifice, Balancing Valves (2” and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T/S-1810-LF or a comparable product by one of the following:

   a. Or approved equal

2. Description:

   a. CWP Rating: 300 psig
   b. Maximum Operating Temperature: 260°F.
   c. Body Material: Bronze or dezincification-resistant brass, lead free, Y-pattern globe type with fixed orifice (venture) for precise regulation and control. NO QUARTER TURN VALVES WILL BE ACCEPTED.
   d. Plug: Bronze or dezincification-resistant brass with EPDM O-Rings.
   e. Seat: Bronze or dezincification-resistant brass.
   f. Ends: Threaded or Solder.
   g. Pressure Gage Connections: Shall have two metering test ports with internal check and protective caps for use with portable differential pressure metering stations.
   h. Handle Style: Calibrated hand wheel equipped with visual position readout and hidden memory stops for repeatable regulation and control.

B. Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves (2-1/2” and larger):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F/G 737A or a comparable product by one of the following:

   a. Tour & Andersson

2. Description:

   a. CWP Rating: 240 psig
   b. Maximum Operating Temperature: 250°F.
   c. Body Material: Cast-iron or steel body, globe pattern with calibrated orifice. NO BUTTERFLY VALVES.
   d. Stem Seals: EPDM O-Rings
   e. Disc: EPDM coated cast-iron disc.
   f. Seat: Bronze or dezincification brass.
   g. Ends: Flanged or grooved.
   h. Pressure Gage Connection: Integral seals for portable differential pressure meter.
   i. Handle Style: Calibrated hand wheel equipped with visual position readout and concealed memory stops for repeatable regulation and control.

2.8 GAS SHUT-OFF COCKS:

A. Gas Shut-Off Cocks, Above Grade (4" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-FP-600-A or a comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: CSA certified and UL/FM listed.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full

B. Gas Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

2.9 LPG SHUT-OFF COCKS:

A. LPG Shut-Off Cocks, Above Grade (3" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-585-70-UL (1/2" – 1") and T-580-70-UL (1-1/4" – 3") or a comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110, CSA certified and UL/FM listed.
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: 250 psi non-shock LP gas per UL842.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full port (1/2" – 1"), conventional port (1-1/4" – 3")

B. LPG Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install check valves for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.
2. Check Valves: In horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, butterfly valves.
2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
3. Throttling Service: Ball or Butterfly valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends.
3. For Steel Piping, NPS 2 and Smaller: Threaded ends.
4. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends.

3.5 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: Threaded ends.
2. Ball Valves: Two piece, full port, bronze with stainless-steel trim.
3. Bronze Lift Check Valves: Class 125, nonmetallic TFE disc.

4. Bronze Swing Check Valves: Class 150, nonmetallic TFE disc.
5. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 and Larger:

1. Ductile-Iron, Single-Flange Butterfly Valves: 200 CWP, EPDM seat, aluminum-bronze disc.

END OF SECTION 22 05 23

SECTION 22 05 29- HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Fastener systems.

B. Related Sections:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.6 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in

walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This

drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.13 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 Pipe Supports: Unless otherwise indicated on the drawings, shall be as follows:

A. The Contractor shall furnish and install all miscellaneous iron work including angles, channels, etc., required to appropriately support the various piping systems. Hanger spacing and location shall conform to 2019 California Plumbing Code Table 313.1.

B. All horizontal runs of piping within the building to be supported from the structural framing with steel rods and split ring hangers, B-Line, Grinnell Company, Tolco, or approved equal. Steel rods shall be secured to overhead framing with side beam connectors. Where necessary, install angle iron between framing to accommodate hanger rods. Where several pipes are running together, Unistrut, B-Line or Powerstrut channels with clamps may be used in lieu of individual pipe hangers, and supported from structure as herein specified. Submit test data for type of hanger supports to be provided. For support conditions other than specified herein, the Contractor shall submit method of support for approval prior to any installation.

C. Horizontal Piping Hangers and Supports:

1. General: Provide factory fabricated horizontal hangers and supports complying with one of the following MSS types listed to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.

   a. Adjustable Steel Clevis Hangers: (MSS Type 1.) B-Line B 3100
   b. Adjustable Swivel Pipe Rings: (MSS Type 5) B-Line B3690

D. Vertical-Piping Clamps:

1. General: Provide factory fabricated vertical-piping clamps complying with the following types listed, to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
2. Two-Bolt Riser Clamps: (MSS Type 8) B-Line B3373

E. Hanger-Rod Attachments:

1. General: Provide factory fabricated hanger-rod attachments B-Line, Tolco or approved equal, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-58 and manufacturer's published product information. Select size of hanger-rod attachment to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.
2. Side beam eye socket, Tolco Fig. #57 for rod sizes 3/8" dia. and Tolco Fig. #25-30-251 for rod sizes 1/2" dia.

F. Building Attachments:

1. General: Provide factory fabricated building attachments, selected by Installer to suit building structural framing conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments for copper-piping systems.

G. Hanger Rods and Spacing shall conform to the following table:

Pipe Sizes	Spacing	Rods
2 Inch and Smaller	6 Feet	3/8 Inch
2-1/2 Inch to 3 Inch	8 Feet	1/2 Inch
4 Inch and larger	8 Feet	5/8 Inch

H. Hangers and Supports shall be adequate to maintain alignment and prevent sagging and shall be placed within 18 inches of joint. Support shall be provided at each horizontal branch connection.

I. Provide lateral bracing as manufactured by B-Line or approved equal for all piping to prevent swaying or movement in accordance with SMACNA "Guidelines for Seismic Restraints of Piping Systems". Piping smaller than indicated in the guidelines shall be provided with bracing as specified for the smallest size indicated. The entire water distribution system shall be properly braced and will not move due to the action of quick closing of valves.

J. Miscellaneous Supports, Wall Brackets, Etc.: Provide where required in accordance with the best standard practices of the trade. Submit shop drawings for all fabricated supports.

2.2 Isolators. All piping which is not isolated from contact with the building by its insulation shall be installed with a manufactured type isolator. Isolators shall be B-Line vibra clamp and cushion, Super Strut, Stoneman "Trisolator", or approved equal. Piping shall be installed and supported in a manner to provide for expansion without strains. Guides shall be properly installed to ensure this requirement.

2.3 Shields:

A. General: Provide shields at piping hangers and supports, factory-fabricated, for all insulated piping as manufactured by Pipeshields Incorporated or approved equal. Size shields for exact fit to mate with pipe insulation.

1. Protection Shields: MSS Type 40; provide high density insert of same thickness of insulation or equal 100-psi average compressive strength, waterproofed calcium silicate, encased with a sheet metal shield. Insert and shield shall cover entire circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

2.4 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.5 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.6 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ERICO International Corporation.
2. PHS Industries, Inc.
3. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
4. Piping Technology & Products, Inc.

B. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig ASTM C 552 or Type II cellular glass with 100-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, stainless- steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.8 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

D. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

L. Insulated Piping:

1. Attach clamps and spacers to piping.

   a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
   b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
   c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Shield Dimensions for Pipe: Not less than the following:

   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.

b. NPS 4: 12 inches long and 0.06 inch thick.

4. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
5. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099123 "Interior Painting."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports metal trapeze pipe hangers and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.

H. Use thermal-hanger shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
4. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. C-Clamps (MSS Type 23): For structural shapes.
6. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
7. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
8. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
9. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
2. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

O. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 22 05 29

SECTION 22 05 53- IDENITIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Valve tags.
5. Warning tags.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

F. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

G. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or self-tapping screws.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: Black.

C. Background Color: White.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

H. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 incheshigh.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.5 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Section 099123 "Interior Painting."

B. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels with painted, color-coded bands or rectangles on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

C. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

D. Pipe Label Color Schedule:

1. Domestic Water Piping:

a. Background Color: White.
b. Letter Color: Black.

2. Sanitary Waste and Storm Drainage Piping:

a. Background Color: White.
b. Letter Color: Black.

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Cold Water: 1-1/2 inches, round.
b. Hot Water: 1-1/2 inches, round.

2. Valve-Tag Color:

   a. Cold Water: Natural.
   b. Hot Water: Natural.

3. Letter Color:

   a. Cold Water: Black.
   b. Hot Water: Black.

3.5 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 22 05 53

SECTION 22 07 19- PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

1. Section 220716 "Plumbing Equipment Insulation."

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.11 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.12 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.17 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.18 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Hot Water Pipe Insulation: All hot water supply and return piping, except exposed connections to plumbing fixtures, flanges and unions shall be insulated with ASTM C547, Class I, "Johns-Manville" "Micro-Lock" 850-APT, Owens-Corning Fiberglass Corp., ASJ/SL-11 or approved equal, 1" thick for sizes up to 2" and 1-1/2" thick for sizes 2" and larger with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Insulation shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC

1. Exposed insulated piping in occupied areas and exposed outside the building shall be covered with Johns-Manville” “Zeston” 30-mil thick white PVC jacketing material per ASTM D1784 with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Jacketing shall comply with ASTM E84, and shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC.
2. Hot water piping below slab shall have insulation protected by a 10-mil thick polyethylene plastic sleeve sealed watertight with poly vinyl chloride tape.

B. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

E. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

F. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

G. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Johns Manville; Micro-Lok.
b. Knauf Insulation; 1000-Degree Pipe Insulation.
c. Owens Corning; Fiberglas Pipe Insulation.

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

H. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Armacell LLC; Tubolit.
b. Nomaco Insulation; IMCOLOCK and NOMALOCK.

I. All insulation shall be continuous through supports and hangers.

J. All fixtures complying with the provisions of the Americans with Disabilities Act shall be provided with Prowrap insulation for exposed hot water pipe, tailpiece, and trap as manufactured by McGuire, and secured per manufacturers recommendations. No tape wrapping shall be permitted.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
b. Eagle Bridges - Marathon Industries; 225.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-96.
   b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 81-33.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
   b. Eagle Bridges - Marathon Industries; 225.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-20.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Products: Subject to compliance with requirements, provide the following:

   a. Johns Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. ABI, Ideal Tape Division; 428 AWF ASJ.
   b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
   c. Compac Corporation; 104 and 105.
   d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. ABI, Ideal Tape Division; 370 White PVC tape.
   b. Compac Corporation; 130.
   c. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

2.4 SECUREMENTS

A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

2.5 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

   a. McGuire Manufacturing.

2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.

   a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for

above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

B. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be the following:

a. McGuire pre-insulated trap and supply covers.

END OF SECTION 22 07 19

SECTION 22 11 16- DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Under-building-slab and aboveground domestic water pipes, tubes, and fittings inside buildings.
2. Encasement for piping.

B. Related Requirements:

1. Section 221113 "Facility Water Distribution Piping" for water-service piping outside the building from source to the point where water-service piping enters the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.12 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.13 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

B. Field quality-control reports.

1.14 FIELD CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of water service.
2. Do not interrupt water service without Architect's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61. Plastic piping components shall be marked with "NSF-pw."

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

B. Soft Copper Tube: ASTM B 88, Type K water tube, annealed temper.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

D. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

E. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

F. Piping within the building and above grade shall be Type "L" ASTM B88, hard drawn copper tubing with wrought copper sweat fittings ANSI B16.18 and B16.22,

G. Outdoor underground piping in sizes 2-1/2" and 3" shall be Type "L" ASTM B88, hard drawn copper as specified for water piping within the building. Piping 2" and smaller shall be Type "K" ASTM B88, hard drawn copper with wrought copper sweat fittings ANSI B16.18 and B16.22.

H. Piping below the building floor shall be Type "K" soft annealed copper tubing with no fittings below the slab.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. Full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys.

D. Flux: ASTM B 813, water flushable.

E. Brazing Filler Metals: AWS A5.8/A5.8M, BCP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.4 VALVE ACCESSORIES AND SPECIALTIES

A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. For service shut-off valves on domestic water; for pressure regulator assemblies, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type
2. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.5 CORROSION PROTECTION:

1. General.

   a. Corrosion protection shall be provided for all below grade copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

2. Materials.

   a. Copper piping encasement.

      1) The polywrap shall be minimum 6 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall conform to the requirements of ASTM D1248.

2) The polywrap shall be as manufactured by Northtown Company or approved equal.

b. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
½” to ¾” copper	2”
1” to 1-½ copper	3”
2” copper	4”
2-1/2” copper	5”
3” copper	6”

c. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

1) Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

d. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.

D. Install shutoff valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."

E. Install shutoff valve immediately upstream of each dielectric fitting.

F. Install domestic water piping level without pitch and plumb.

G. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

H. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

I. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

J. Install piping to permit valve servicing.

K. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

L. Install piping free of sags and bends.

M. Install fittings for changes in direction and branch connections.

N. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

O. Install thermometers on outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing Piping."

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

S. Corrosion Protection:

1. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the poly-wrap. The bunched-up poly-wrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the poly-wrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.

2. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.
3. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 2 and Smaller: 72 inches with 3/8-inch rod.
2. NPS 2-1/2 to NPS 3: 8 feet with 1/2-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.5 CONCRETE VAULT INSTALLATION

A. Install precast concrete vaults according to ASTM C 891.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
3. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.7 PIPE AND EQUIPMENT IDENTIFICATION

A. Each operating and service line shut-off valve shall be identified by a 19 ga. brass tag with stamped, engraved type of service identified and area served, complete with hole and brass chain mounted on valve stem or handle. Tag shall be a minimum of one and one-half inch (1-1/2") in diameter.

B. All piping systems shall be readily identifiable by appropriate labeling with the name of the piping contained. Such labeling shall be by means of metal tags, stenciling, stamping, or with

adhesive markers, in a manner that is not readily removable. Labeling shall appear on the piping at intervals of not more than 20 ft and at least once in each room and each story traversed by the piping system.

C. Provide on exterior wall of each building opposite the building's main gas service a sign reading "Gas Shut Off". Sign shall be metal with minimum 1-1/2" high-embossed letters.

1. All equipment shall be provided with name plate indicating all pertinent information on it

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

Schedule of Test Pressures:

System Tested	Gauge	Test	Duration
Water	100 PSI	Water	4 Hours

e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

   a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
   b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

   a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
   b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours. Operate all valves during the retention period.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours. Operate all valves during the retention period.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 OPERATION INSTRUCTION

A. Prior to occupancy or prior to the date of final inspection, whichever may occur first, the Contractor shall prepare two (2) sets of typewritten instructions for the operation of all equipment, valves, etc., specified and furnished as a part of the work under this section, and shall assign a competent person, thoroughly familiar with the job, to demonstrate and instruct a representative of the Owner in the operation of the equipment. The time of said demonstration and instructions shall be arranged with the Owner's representative approximately one (1) week in advance. Verbal instructions shall include shut-off location of gas and water. The Contractor shall assemble all operation and maintenance data supplied by the manufacturers of the various pieces of equipment, all keys and special wrenches required to operate and service the equipment (including keys for yard boxes, gas stops and fixture stops), and all equipment warranties and deliver same to the representative of the Owner on date of said instructions.

3.12 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller, shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

E. Under-building-slab, domestic water piping, NPS 2 and smaller, shall be the following:

1. Soft copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

F. Aboveground domestic water piping shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and soldered joints.

3.13 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use ball valves for piping NPS 2 and smaller. Use butterfly valves with flanged ends for piping NPS 2-1/2 and larger.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

END OF SECTION 22 11 16

SECTION 22 11 19- DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Balancing valves.
5. Temperature-actuated, water mixing valves.
6. Hose bibbs.
7. Water-hammer arresters.
8. Trap-seal primer valves.
9. Trap-seal primer systems.

B. Related Requirements:

1. Section 223200 "Domestic Water Filtration Equipment" for water filters in domestic water piping.
2. Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.
3. Section 224300 "Medical Plumbing Fixtures" for thermostatic mixing valves for sitz baths, thermostatic mixing-valve assemblies for hydrotherapy equipment, and outlet boxes for dialysis equipment.
4. Section 224500 "Emergency Plumbing Fixtures" for water tempering equipment.
5. Section 224713 "Drinking Fountains" for water filters for water coolers.
6. Section 224716 "Electric Water Coolers" for water filters for water coolers.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

D. Domestic Water: The Contractor shall be responsible for the domestic water service outside of the building within five feet (5’) of the foundation, and within the building itself. See Civil Engineer’s plans for onsite domestic water system.

E. Domestic Water Service: The Contractor shall arrange with the serving utility company for the installation of all water meter assemblies and reduced pressure backflow devices, including the service mains and vaults, and all required appurtenances as indicated on the drawings and in accordance with serving utility standards and shall pay all costs incurred. All required capacity fees, frontage fees and inspections, shall be paid for by the Owner. Contractor shall provide necessary tap-in connections in water main for sterilizing of domestic water system. Contractor shall connect into the main water service line as indicated on the drawings. The installation shall be in accordance with the serving utility company's standards.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 and NSF 14.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
   b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1001.
4. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
5. Body: Bronze.
6. Inlet and Outlet Connections: Threaded.
7. Finish: Rough bronze.

B. Hose-Connection Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.
d. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1011.
4. Body: Bronze, nonremovable, with manual drain.
5. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
6. Finish: Rough bronze.

C. Pressure Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1020.
4. Operation: Continuous-pressure applications.
5. Pressure Loss: 5 psig maximum, through middle third of flow range.
6. Size: See plans.
7. Design Flow Rate: See plans.
8. Selected Unit Flow Range Limits: See plans.
9. Accessories:

a. Valves: Ball type, on inlet and outlet.

D. Laboratory-Faucet Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1035.
4. Size: NPS 1/4 or NPS 3/8 (DN 8 or DN 10) matching faucet size.
5. Body: Bronze.
6. End Connections: Threaded.
7. Finish: Chrome plated.

2.4 OUTLET BOXES

A. Clothes Washer Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. Guy Gray Manufacturing Co., Inc.
   c. IPS Corporation.
   d. Symmons Industries, Inc.
   e. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   f. Whitehall Manufacturing; a div. of Acorn Engineering Company.
   g. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.

3. Mounting: Recessed.
4. Material and Finish: Plastic box and faceplate.
5. Faucet: Combination valved fitting or separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
6. Supply Shutoff Fittings: NPS 1/2 (DN 15) gate, globe, or ball valves and NPS 1/2 (DN 15) copper, water tubing.
7. Drain: NPS 2 (DN 50) standpipe and P-trap for direct waste connection to drainage piping.
8. Inlet Hoses: Two 60-inch- (1500-mm-) long, rubber household clothes washer inlet hoses with female, garden-hose-thread couplings. Include rubber washers.
9. Drain Hose: One 48-inch- (1200-mm-) long, rubber household clothes washer drain hose with hooked end.

B. Icemaker Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. IPS Corporation.

3. Mounting: Recessed.
4. Material and Finish Plastic box and faceplate.
5. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 (DN 15) or smaller copper tube outlet.
6. Supply Shutoff Fitting: NPS 1/2 (DN 15) gate, globe, or ball valve and NPS 1/2 (DN 15) copper, water tubing.

2.5 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Include operating key with each operating-key hose bibb.

2.6 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.
   b. Zurn Industries, LLC; Plumbing Products Group; Specification Drainage Products.

2. Standard: ASSE 1010 or PDI-WH 201.
3. Type: Metal bellows.
4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.7 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. MIFAB, Inc.
   b. Precision Plumbing Products, Inc.
   c. Sioux Chief Manufacturing Company, Inc.

2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.8 TRAP-SEAL PRIMER SYSTEMS

A. Trap-Seal Primer Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.

2. Standard: ASSE 1044.
3. Piping: NPS 3/4, ASTM B 88, Type L; copper, water tubing.
4. Cabinet: Surface-mounted steel box with stainless-steel cover.
5. Electric Controls: 24-hour timer, solenoid valve, and manual switch for 120-V ac power.

   a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

6. Vacuum Breaker: ASSE 1001.
7. Number Outlets: Four.
8. Size Outlets: NPS 1/2.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water-hammer arresters in water piping according to PDI-WH 201.

B. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

C. Install trap-seal primer systems with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 Access Panels:

A. Wall access panels shall be minimum 12" x 12" for concealed valves and other equipment unless otherwise specified or indicated. Ceiling access panels shall be 18" x 18" minimum. Access panels shall be located and positioned for ready access and service of equipment housed within. Where access panels are specified with keyed cylinder locks, all such locks shall be identically keyed.
   1. Wall, Non-Fire Rated: Elmdor/Stoneman DW-SS-CL, drywall, stainless steel finish, cylinder lock.
   2. Ceiling, Non-fire Rated: Elmdor/Stoneman DW, drywall, prime coated finish, screwdriver latch.

3. Wall, Fire Rated: Elmdor/Stoneman FR-SS-CL, fire rated, stainless steel finish, cylinder lock.
4. Ceiling, Fire rated: Elmdor/Stoneman FRC, Fire rated, prime coated finish, return latch.

3.3 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.4 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
1. Supply-type, trap-seal primer valves.
2. Trap-seal primer systems.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.5 FIELD QUALITY CONTROL

A. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

B. Prepare test and inspection reports.

3.6 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

B. Set field-adjustable flow set points of balancing valves.

C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

END OF SECTION 22 11 19

SECTION 22 13 16- SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

B. Related Sections:
1. Section 221313 "Facility Sanitary Sewers" for sanitary sewerage piping and structures outside the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

    1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

1.14 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.15 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Architect's written permission.

1.16 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.17 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.18 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.

C. ASTM C 1540, CISPI, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ANACO-Husky SD 4000 series.
   b. Clamp All HI_TORQ 125 series

2. Standards: ASTM C 1277 and CISPI 310.
3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Soil and waste piping within the building itself and outside within five feet (5') of the foundation, shall be no-hub cast iron pipe and fittings, asphaltum coated, free from defects, and shall comply with CISPI. Standard 301, ASTM A-888 or ASTM A-74. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute. Fittings shall be made up with "Husky" SD 4000 series or “Clamp All” HI-TORQ 125 series stainless steel type 304 couplings and shall conform to ASTM C1540 & ASTM C564 except all above ground vent pipe fittings may be made with "Anaco" or "Tyler" stainless steel two band couplings conforming to CISPI Standard 310.

E. Except where otherwise indicated on the plans, building sewer piping from five feet (5') outside of the building to connections at the sewer shall be PVC (polyvinyl chloride) ASTM D3034, SDR-35 sewer pipe with locked-in gasket (ASTM F477, Elastomeric Seal)

2.3 CLEANOUTS

A. Cast-Iron Cleanouts:

1. Cleanouts to Grade: Jay R. Smith No. 4258 or Jay R. Smith No. 4253 with X-H bronze plug and X-X-H non-skid cover with lifting device set flush with surface for concrete areas. Asphalt or nonsurfaced areas shall be installed with ring of concrete poured around the bottom flange six inches (6") below surface. Use cast iron soil pipe on cleanout risers. For cleanouts in non-traffic areas, terminate cleanout plug in concrete yard box
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Smith, Jay R. Mfg. Co.
    b. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

3. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
4. Top-Loading Classification(s): Light Duty Medium Duty Heavy Duty and Extra-Heavy Duty.
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

B. Yard Boxes & Vaults: For service for cleanouts, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type.

2.4 CORROSION PROTECTION

A. General.

1. Corrosion protection shall be provided for all below grade cast iron and copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

B. Materials.

1. Cast iron piping encasement.

    a. The polywrap shall be minimum 8 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall meet or exceed the requirements of AWWA C105, ANSI A21.5 and ASTM A674.
    b. The polywrap shall be as manufactured by Northtown Company or approved equal.

2. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
2” to 3” cast iron	14”

4” cast iron	16”
6” cast iron	20”
8” cast iron	24”

3. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

   a. Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

4. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.

2. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

O. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."

2. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

P. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

T. Below-grade piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts and sleeves as manufactured by Century Line.

U. Corrosion Protection:

a. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the polywrap. The bunched-up polywrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the polywrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.
b. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.

c. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
8. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
4. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4: 84 inches with 3/8-inch rod.
2. NPS 1-1/2: 108 inches with 3/8-inch rod.
3. NPS 2: 10 feet with 3/8-inch rod.
4. NPS 2-1/2: 11 feet with 1/2-inch rod.
5. NPS 3: 12 feet with 1/2-inch rod.
6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.

I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

3.7 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. No piping work shall be concealed or covered until piping has been tested, inspected and approved by the Inspector. All piping for plumbing systems shall be completely installed and tested as required by the Uniform Plumbing Code. Test pressures and times indicated are a minimum only. All tests shall be as required by the governing authority as wellTest for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.10 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

C. Aboveground, vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

D. Underground, soil, waste, and vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

END OF SECTION 22 13 16

SECTION 22 42 16 13- COMMERCIAL LAVATORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lavatories.
2. Faucets.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.
11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.

12. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
13. Accessible fixture controls shall comply with CBC Sections 11B-611.3 for lavatories and sinks.
14. Accessible lavatories and sinks shall be mounted with the front of the higher of the rim or counter surface 34” maximum above the finish floor or ground. Depth of lavatories or sinks shall not interfere with knee an toe clearance provided in accordance with CBC 11B-306 when forward approach is required CBC Sections 11B-606.3 and 11B606.7.
15. Water supply and drain pipes under accessible lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under accessible lavatories or sinks. CBC Section 11B-606.5.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES

A. Lavatory: Vitreous china, wall mounted, with back.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Fixture:

a. Standard: ASME A112.19.2/CSA B45.1.
b. Type: For wall hanging.
c. Faucet-Hole Location: Top.

d. Color: White.
e. Mounting Material: Chair carrier.

3. Support: ASME A112.6.1M, Type II, concealed-arm lavatory carrier.

2.2 SOLID-BRASS, MANUALLY OPERATED FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Lavatory Faucets: Manual-type, single-control mixing, commercial, solid-brass valve.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago Faucets.

2. Standard: ASME A112.18.1/CSA B125.1.
3. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
4. Body Material: Commercial, solid brass.
5. Finish: Polished chrome plate.
6. Mounting Type: Deck, exposed.

2.3 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

E. Operation: Loose key.

F. Risers:

1. NPS 3/8.
2. Chrome-plated, rigid-copper-pipe and brass straight or offset tailpieces riser.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Install lavatories level and plumb according to roughing-in drawings.

B. Install supports, affixed to building substrate, for wall-mounted lavatories.

C. Install accessible wall-mounted lavatories at handicapped/elderly mounting height for people with disabilities or the elderly, according to ICC/ANSI A117.1.

D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

G. Point of use mixing valve in cabinet to be recessed in wall, under lavatory.

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of lavatories, inspect and repair damaged finishes.

B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed lavatories and fittings.

D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-606.4 for lavatories and sinks.

D. Accessible sinks shall be 6-1/2” deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34” maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 42 16 13

SECTION 22 47 13- DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes drinking fountains and related components.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
10. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
11. Accessible fixture controls shall comply with CBC Sections 11B-602.3 for drinking fountains.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section.

In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains to include in maintenance manuals.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

A. Drinking Fountains: Stainless steel, wall mounted.

1. Stainless-Steel Drinking Fountains:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   1) Elkay Manufacturing Co.
   2) Haws Corporation.

3. Type Receptor: On horizontal support.
4. Back Panel: Stainless-steel wall plate behind drinking fountain.
5. Bubblers: Two, with adjustable stream regulator, located on deck.
6. Control: Push button.
7. Drain: Grid type with NPS 1-1/4 tailpiece.
8. Supply: NPS 3/8 with shutoff valve.
9. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
10. Support: ASME A112.6.1M, Type III lavatory carrier.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

B. Examine walls and floors for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.

B. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.

C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

E. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Install ball, gate, or globe shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Adjust fixture flow regulators for proper flow and stream height.

3.5 CLEANING

A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

C. Provide protective covering for installed fixtures.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains, 11B-604.6 for water closets, 11B-604.9.5 for children's water closets, 11B-605.4 for urinals, 11B-606.4 for lavatories and sinks, 11B-607.5 for bathtubs, 11B-608.5 for showers, and 11B-611.3 for washing machines and clothes dryers.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

3.7 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 47 13

DIVISION 31

EARTHWORK

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and, grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants, and, grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site-clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Erosion Control Drawings C1.10-C1.15.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

3.4 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 31 10 00

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 320120 - DETECTABLE WARNING SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Raised truncated domes.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Detectable warning surfaces:
      a. Detectable warnings surfaces shall comply with CBC Section 11B-705.1.
      b. Detectable warning surfaces shall be yellow conforming to FS 33538 of Federal Standard 595C, except for locations at curb ramps, islands, or cut-through medians where color used shall contrast visually with that of adjacent walking surfaces, either light-on-dark, or dark-on-light. CBC Sections 11B-705.1.1.3.
      c. Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact. CBC Section 11B-705.1.1.4.
      d. Provide minimum 5 year warranty per DSA Bulletin 10/31/02, revised 04/09/08.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Samples: 5 by 5 inch sample.

C. Shop Drawings: Show fabrication details, composite structural system, joints, and material to be used as well as outlining installation materials and procedure.

D. Qualification Data: For manufacturer.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance requirements indicated, based on comprehensive testing of current materials.

F. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Duration: 5 years. Such warranty shall indicate compliance with architectural standards as published in the current edition of the California Building Standards Code, and also include durability criteria which indicate that the shape, color fastness, confirmation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly for specified years after initial installation.
   1. As used in this bulletin, "not degrade significantly" means that the product maintains at least 90 percent of its approved design characteristics, as determined by the enforcing agency.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Raised Truncated Domes: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Armorcast Products Company. (Basis of Design)
   2. Access Tile.
   3. Armor-Tile by Engineered Plastics Inc.
   4. ADA Tactile Systems.
   5. Or equal.

2.2 RAISED TRUNCATED DOMES

A. Surface applied system:
   1. Product: Model A6003648 by Armorcast Products Company.
   2. Compressive Strength: 11,430 PSI per ASTM C-170-99.
   3. Shear Strength: 11,670 PSI per ASTM D-372-02.
   4. Flexural Strength: 3,330 PSI per ASTM C-580-02.
   5. Modulus Elasticity: 1,776,400 PSI per ASTM C-580-02.
   6. Tensile Strength: 1,710 PSI per ASTM C-307-99.
   7. Chemical Resistance: Pass per ASTM D-543.
   8. Simulated Sunlight: Pass per ASTM D-1501.
   9. Accelerated Service Test: Pass per ASTM D-756.
   10. Water Absorption: <.1% per ASTM D-570.
   11. Flammability Test: Pass per ASTM D-635.
   12. Fungus Resistance Test: No Growth per ASTM G-21.
   13. Smoke Density: 0.3 (DS@1.5 Minutes) and 14 (DS@4 Minutes) per ASTM E-662-03.
   14. Color: Yellow.

15. Installation: Flush install by pressing into wet concrete per manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 INSTALLATION

A. Surface Applied System:
1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
3. Ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to the Architect.
4. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.
5. The surface to receive the detectable warning surface tile (not recommended for asphalt) is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a rag soaked in Acetone.
6. Immediately prior to installing the detectable warning surface tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.
7. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
8. Apply the adhesive on the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2” width of the adhesive locator. A 3 x 4 foot tile will typically require an entire tube of adhesive.
9. Set the tile true and square to the curb ramp area as detailed in the design drawings.
10. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3-1/2 inch using the recommended diameter bit.

Drill through the tile without hammer option until the tile has been successfully penetrated, and then with hammer option to drill into the concrete.

11. Immediately after drilling each hole, and while still applying foot pressure, vacuum, brush or blow away dust and set the mechanical fastener as described below, before moving on to the next hole.
12. Mechanically fasten tiles to the concrete substrate using a hammer to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the hammer, taking care to avoid any inadvertent blows to the truncated dome or tile surface. A plastic deadblow or leather hammer is recommended.
13. Working in a sequence which will prevent buckles in the tile, proceed to drill and install all fasteners in the tile's molded recesses.
14. Following the installation of the tiles, the perimeter caulking sealant should be applied. Follow the perimeter caulking sealant manufacturer's recommendations when applying. Tape all perimeter edges of the tile and also tape the adjacent concrete back 1/2” from the tile's perimeter edge. Tool the perimeter caulking with a plastic applicator or spatula to create a straight edge in a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
15. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking.

END OF SECTION 320120

SECTION 32 12 16 - HOT-MIX ASPHALT (HMA) PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hot-mix asphalt paving and paving overlay.

B. Traffic Stripes and Pavement Marking.
   1. traffic stripe: A longitudinal centerline or a longitudinal lane line used for separating traffic lanes in the same direction of travel or in the opposing direction of travel or a longitudinal edge line marking the edge of the traveled way or the edge of a lane at a gore area separating traffic at an exit or entrance ramp. A traffic stripe is a traffic line as shown.
   2. Pavement marking: A transverse marking such as (1) a limit line, (2) a stop line; or (3) a word, symbol, shoulder, parking stall, or railroad grade crossing marking.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

C. Material certificates.

D. Log of placement of asphalt, including dates, times, temperature readings and other pertinent information.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC) and the California Department of Transportation (Caltrans), latest editions and supplements for asphalt paving work. These Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and payment sections do not apply to this document.

C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Tack Coat: Minimum surface temperature of 60 deg F.
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: Crushed rock conforming to SSPWC 203-6.2.3.

B. Fine Aggregate: Sand, rock dust, mineral filler, or a blend of these materials conforming to SSPWC 203-6.2.3. Mineral filler, if required, shall conform to SSPWC section 203-6.2.3.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Paving asphalt, viscosity grade PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

B. Tack Coat: PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

C. Mixes: Hot-Mix Asphalt (HMA):

Surface Course: Dense, hot-laid, hot-mix asphalt plant mix III-C2, PG 64-10 designed in conformance with SSPWC Section 203.

Base Course: Dense, hot laid, hot-mix asphalt plant mix III-B, PG 64-10 designed in conformance with SSPWC Section 203.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-1952E for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01R2 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: White, Yellow, and Blue as indicated on the plans.

C. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

PART 3 - EXECUTION

3.1 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.

1. Mill to a depth of 2 inches, minimum.

3.2 PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.

C. Patching: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

3.3 SURFACE PREPARATION

A. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.08 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
3. Asphalt binder tack coat temperature must be in the range of 285 to 350 deg F when applied.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at minimum temperature of 280 deg F and maximum temperature of 350 deg F (PG 64-10).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Pave HMA in maximum 3” thick compacted layers.

2. Minimum atmospheric temperature shall be 55 deg F, and minimum surface temperature shall be 60 deg F. If the surface to be paved is both in sunlight and shade, pavement surface temperatures must be taken in the shade.

3. Complete compaction for Base Course before surface temperature drops below 250 deg F, and for Finish Course before surface temperature drops below 150 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch (no minus).

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch
2. Surface Course: 1/8 inch
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 PAVEMENT STRIPING AND MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age before starting pavement striping and marking, as recommended by the paint manufacturer.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

E. Do not paint if the atmospheric temperature could drop below 50 deg F during the drying period.

3.8 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 32 12 16

SECTION 32 13 13 – CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Curbs and gutters.
   2. Walkways.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated, including admixtures.

B. Design Mixtures: For each concrete pavement mixture.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

C. All work to be performed and materials to be used shall be in accordance with the Standard Specifications for Public Works Construction, latest edition and supplements.

D. The Contractor shall have one copy of the Standard Specifications at the job site.

E. The Standard Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and pavement sections do not apply to this document.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."

2.2 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: ASTM C 150, Type II, low alkali. Supplement with the following:

a. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quantity.

B. Combined Aggregates: Gradation “C” conforming to SSPWC Section 201-1.3.2.

C. Water: ASTM C 94/C 94M.

2.3 CURING MATERIALS

A. Liquid Curing Compound: ASTM C309, fugitive dye dissipating type, complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.

B. Moisture-Retaining Cover (Curing Sheet): ASTM C 171, non-staining polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

2.4 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

D. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-

1952 for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: As indicated per plan.

2.5 WHEEL STOPS

A. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures in conformance with SSPWS Section 201, with the following properties:

1. Concrete class: 560-C-3250
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45
3. Slump Limit: 4 inches, plus or minus 1 inch.

B. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates to Architect for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

A. General: Form construction, isolation, and control joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

F. Portland Cement Concrete paving shall be stable, firm, and slip-resistant and shall comply with CBC Sections 11B-302 and 11B-403.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.

1. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturers written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these methods.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances as follows

1. Elevation: 1/4 inch
2. Thickness: Plus 3/8 inch minus 1/4 inch
3. Surface: Gap below 10-foot-long, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.9 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.10 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.11 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 323113 - CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Chain-Link Fences: Industrial.
   2. Gates: Swing.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.

A. Accessibility Requirements for Door Hardware: (all requirements below shall apply to gates as well)
   1. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.
   2. The clear opening width for a door shall be 32” minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. There shall be no projections into it below 34” and 4” maximum projections into it between 34” and 80” above the finish floor or ground. Door closers and stops shall be permitted to be 78” minimum above the finish floor or ground. CBC Section 11B-404.2.3
   3. Handles, pulls, latches, locks, and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34” minimum and 44” maximum above finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable form both side. CBC Section 11B-404.2.7
   4. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.
      a. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 pounds (22.2 N) maximum.
      b. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds (67N).
      c. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.

d. The force required to activate any operable parts, such as retracting latch bolts or disengaging other devices, shall be 5 pounds (22.2N) maximum to comply with CBC Section 11B-309.4.

5. Door closing speed shall be as follows: CBC Section 11B-404.2.8.
   a. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds min.
   b. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
6. Thresholds shall comply with CBC Section 11B-404.2.5.
7. Floor stops shall not be located in the path of travel and 4" maximum from walls.
8. Hardware (including panic hardware) shall not be provided with "Night Latch" (NL) function for any accessible doors or gates unless the following conditions are met per DSA Interpretation 10-08 DSA /AC (External), revised 4/28/09. Such conditions must be clearly demonstrated and indicated in the specifications:
   a. Such hardware has a 'dogging' feature.
   b. It is dogged during the time the facility is open.
   c. Such 'dogging' operation is performed only by employees as their job function (non-public use).
9. Pair of doors: limit swing of one leaf to 90 degrees so that a clear floor space is provided beyond the arc of the swing for the wall-mounted tactile sign. CBC Section 11B-703.4.2.1.

B. Fences, gates and hardware:
   1. Gates that are part of the accessible route shall meet all the requirements of an accessible door in compliance with CBC Section 11B-404.
   2. The lever of lever actuated latches or locks for an accessible gate shall be curved with a return to within 1/2" of the (face of) gate to prevent catching on the clothing or persons. California Referenced Standards code. T-24 Part 12, Section 12-10-202, Item (F).
   3. Swing doors and gate surfaces within 10" of the finish floor or ground shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16" of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped. CBC Section 11B-404.2.10.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
   1. Fence and gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, swing gate, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

C. Product Certificates: For each type of chain-link fence, and gate, signed by product manufacturer.
   1. Strength test results for framing according to ASTM F 1043.

D. Qualification Data: For Installer.

E. Maintenance Data: For the following to include in maintenance manuals:

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

B. Interruption of Existing Utility Service: Do not interrupt utility services to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect no fewer than 2 days in advance of proposed interruption of utility services.
   2. Do not proceed with interruption of utility services without Architect's written permission.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Chain-Link Fences and Gates: Subject to compliance with requirements, provide products by one of the following.
   1. Master-Halco.
   2. Ameristar.
   3. Anchor Fence.
   4. Merchants Metals.
   5. Swan Fence Inc.

6. Or equal.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
   1. Steel Wire Fabric: Metallic-coated wire with 9 gage (0.144 inches) core thickness.
      a. Mesh Size: 2 inches.
      b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied after weaving.
   2. Selvage: Knuckled at both selvages.

2.3 INDUSTRIAL FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, and the following:
   1. Group: Group IC round high yield pipe, ASTM F 1043, domestic (not imported) Deluxe Quality (DQ-40) Industrial (not Schedule 40).
   2. Fence Height: As indicated on Drawings.
   3. Strength Requirement: Heavy industrial according to ASTM F 1043.
   4. Post Diameter and Thickness:
      a. Top and Bottom Rail: 1-5/8 inch O.D. (nominal 1-1/4 inch).
      b. Terminal Post (Corner, End, and Gate Post): 2-7/8 inch O.D. (nominal 2-1/2 inch).
      c. Line and Brace Rail: 1-7/8 inch O.D. (nominal 1-1/2 inch).
      d. Swing Gate Members: 1-7/8 inch O.D. (nominal 1-1/2 inch).
   5. End and Corner Post Top: Dome.
   6. Coating for Steel Framing:
      a. Metallic Coating:
         1) Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123 or 4.0-oz./sq. ft. zinc coating per ASTM A 653.
         2) Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
         3) External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc pigmented coating.
         4) Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
         5) Coatings: Any coating above.
      b. Polymer Coating:
         1) ASTM D 668, Class 2b, fluidized PVC bonded and cured onto metallic-coated steel wire.
         2) Color: As selected by Architect from manufacturer's full range, complying with ASTM F 934.

2.4 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:
   1. Location: Extended along bottom of fence fabric and along top when either top or bottom rails are not indicated on Drawings.

B. Metallic-Coated Steel Wire: Minimum 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817, ASTM A 824, and the following:
   1. Metallic Coating: Matching chain-link fabric coating type and weight.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

2.6 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for swing gate types.
   1. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.

B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900, domestic Deluxe Quality (DQ), and the following:
   1. Gate Fabric Height: 2 inches less than adjacent fence height.
   2. Leaf Width: As indicated.
   3. Frame members, including interior bracing:
      a. Tubular Steel: 1-7/8 inch O.D. (nominal 1-1/2 inch).

C. Frame Corner Construction:
   1. Welded adjustable truss rods for panels 5 feet wide or wider.

D. Hardware: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
   1.

2.7 CAST-IN-PLACE CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94.
   1. Concrete Mixes: Normal-weight concrete with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

2.8 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

2.9 POLYMER FINISHES

A. Supplemental Color Coating: In addition to specified metallic coatings for steel, provide fence components with polymer coating.

B. Metallic-Coated Steel Tension Wire: PVC-coated wire complying with ASTM F 1664, Class 2b.

C. Metallic-Coated Steel Framing and Fittings: Comply with ASTM F 626 and ASTM F 1043 for polymer coating applied to exterior surfaces and, except inside cap shapes, to exposed interior surfaces.
   1. Polymer Coating: Not less than 10-mil- thick PVC or 3-mil- thick polyester finish.

D. Color: Match chain-link fabric, complying with ASTM F 934.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.
   1. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Hole diameter dug or drilled minimum 4 times largest cross section of post and minimum depth of 24 inches plus additional 3 inch for each 1 feet increase in fence height over 4 feet.
      b. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts equidistant at intervals not exceeding 10 feet o.c unless otherwise indicated.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
   1. Locate horizontal braces at midheight of fabric 6 feet or higher, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.
   1. Top Tension Wire: Install tension wire through post cap loops.
   2. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Bottom Rails: Install, spanning between posts.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.5 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323113

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

7351 HOLDER ST.
BUENA PARK, CA 90620
BUENA PARK SCHOOL DISTRICT

DSA File No. 30-4
App. No. 04-120369
PTN. 66456-39

DRAWING INDEX

SHT. NO.	SHEET NAME
GENERAL	
A0.1	COVER SHEET
A0.2	GENERAL NOTES AND ABBREVIATIONS
A0.3	CODE ANALYSIS SITE PLAN
A0.4	EXITING FLOOR PLAN
CIVIL	
C0.01	TITLE SHEET
C1.10	EROSION CONTROL & DEMOLITION PLAN
C1.11	EROSION CONTROL & DEMOLITION PLAN
C1.30	GRADING PLAN
C1.31	GRADING PLAN
C1.40	PAVING PLAN
C1.41	PAVING PLAN
C5.00	DETAILS
ARCHITECTURAL	
A1.1	OVERALL SITE PLAN
A2.1	DEMOLITION/ ALTERATION FLOOR PLANS/RCPS
A7.1	ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS
A7.2	ENLARGED ALTERATION FLOOR PLANS/INTERIOR ELEVATIONS
A9.1	DOOR SCHEDULE/WINDOW TYPES
A10.1	EXTERIOR DETAILS
A10.2	INTERIOR DETAILS
A10.3	DETAILS
STRUCTURAL	
S1.1	GENERAL NOTES AND STRUCTURAL DETAILS
S2.1	DEMOLITION / (E) FOUNDATION AND (E) FRAMING PLANS
PLUMBING	
P0.1	PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES
P1.1	PLUMBING DEMOLITION PLAN,FLOOR PLAN AND ENLARGED PLANS
TOTAL SHEET COUNT: 24	

STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

Application No. 04-120369

File No. 30-4

[X] The drawings or sheets listed on the cover or index sheet (all M, E and FA drawings)
[ ] This drawing, page of specifications/calculations

have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:

1. design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2. coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.

The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1. (Title 24, Part 1, Section 4-317 [b])

I find that:
[X] All drawings or sheets listed on the cover or index sheet
[ ] This drawing or page

[X] is/are in general conformance with the project design and
[X] has/have been coordinated with the project plans and specifications

Signature **Date** 10/15/2021

Architect or Engineer designated to be in general responsible charge.

Brian P. Whitmore
Print Name

C 30345 **License Number** 09-30-2023 **Expiration Date**

STATEMENT OF GENERAL CONFORMANCE AND SIGNATURE BLOCK PER IR A-18

CODES AND REGULATIONS

PARTIAL LIST OF APPLICABLE CODES AS OF JANUARY 1, 2020*

2019 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
(2018 INTERNATIONAL BUILDING CODE, VOL 1 & 2 AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
(2018 IAPMO UNIFORM PLUMBING CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR

2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
(2018 INTERNATIONAL FIRE CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
(2018 INTERNATIONAL EXISTING BUILDING CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen) PART 11, TITLE 24 CCR

2019 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

2016 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS (PER 2019 CBC PART 2 CH 35)

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PROJECT DESCRIPTION

THE PROJECT INCLUDES REPLACING STOREFRONT, ACCESSIBLE RESTROOM AND PATH OF TRAVEL UPGRADES AND FINISHES IN THE MULTI-PURPOSE ROOM.

DSA REQUIREMENTS

1. ALL WORK SHALL CONFORM TO THE 2019 EDITION OF THE TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. AS A FACILITY WHICH COMES UNDER THE APPROVAL AND AUTHORITY OF THE DIVISION OF THE STATE ARCHITECT (DSA), THIS PROJECT IS SUBJECT TO DRAWING AND JOB SITE REVIEW BY A REPRESENTATIVE OF DSA.
3. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS AFFECTING FLA, SSS, AND/OR ACS SHALL BE MADE BY ADDENDA OR A CONSTRUCTION CHANGE DOCUMENT APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR
4. A PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN ITEM #17.
5. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
6. A COPY OF PART 1 TO PART 5 OF TITLE 24 SHALL BE KEPT AND BE AVAILABLE IN THE FIELD DURING CONSTRUCTION.
7. DSA SHALL BE NOTIFIED OF THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24, CCR
8. THE DIVISION OF THE STATE ARCHITECT IS EXEMPT FROM ARBITRATION OR MEDIATION PROCEDURES.
9. SUPERVISION BY THE DIVISION OF THE STATE ARCHITECT IS PER SECTION 4-334, PART 1, TITLE 24, CCR
10. ADMINISTRATION OF CONSTRUCTION PER PART 1, TITLE 24, CCR:
    - VERIFIED REPORTS PER SECT 4-336, PART 1, TITLE 24 CCR
    - DUTIES OF ARCHITECT PER SECT 4-331, 4-341; PART 1, TITLE 24 CCR
    - DUTIES OF CONTRACTOR PER SECT. 4-343; PART 1, TITLE 24
11. TESTING AND INSPECTION:
    - INSPECTION APPROVED BY DSA AS PER SECT. 4-333(D); PART 1, TITLE 24, CCR
    - TESTS AND TESTING LABORATORIES PER SECT 4-335
    - SPECIAL INSPECTION PER SECT. 4-333(C)
12. CHANGES IN LEVEL FOR FLOOR FINISHES SHALL CONFORM WITH CBC SECTION 11B-302 AND 11B-303.
13. ALL TESTS TO CONFORM TO REQUIREMENTS OF SECTION 4-335; PART 1, TITLE 24, CCR
14. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335; PART 1, TITLE 24, CCR AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.
15. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH ITEM #17.
16. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)
17. INSPECTOR OF RECORD REQUIREMENTS:
    A. A DSA CERTIFIED PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.
    B. INSPECTOR SHALL BE CERTIFIED AS A CLASS 3 INSPECTOR THROUGH THE DIVISION OF THE STATE ARCHITECT INSPECTOR EXAMINATION PROGRAM. INSPECTOR SHALL ALSO BE SPECIFICALLY APPROVED BY THE DIVISION OF THE STATE ARCHITECT FOR THIS PROJECT AT LEAST 10 DAYS PRIOR TO THE START OF ANY WORK FOR THIS PROJECT.
    C. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.

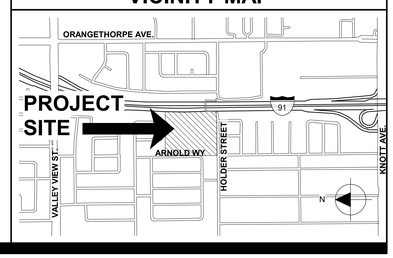
DEFERRED APPROVALS

NONE

ADD ALTERNATES

FOLDING GLASS PARTITION IN LIEU OF STOREFRONT AT WEST ELEVATION ONLY

VICINITY MAP



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

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LICENSED ARCHITECT BRIAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA — DATE SIGNED 10/15/2021	

GENERAL NOTES

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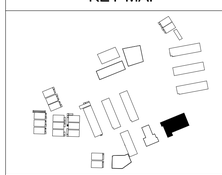
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
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COVER SHEET

Date 10/19/2021	Project Number 21008
Scale 1" = 100'-0"	Drawing Number A0.1
Drawn Author / Checked Checker	

PRINT DATE: 10/22/2021 4:21:05 PM
FILE PATH: C:\Users\eyedri\Documents\21008-Buena-Park-USD-Corey-MPR-A19_eyedri.rvt

ARCHITECTURAL DRAWING ABBREVIATIONS

#	POUND OR NUMBER
&	AND
*	ITEMS IDENTIFIED AS "NIC" ARE NOT PART OF THIS DSA APPROVAL
2X	NOMINAL LUMBER SIZE (4X, 6X, 8X, ETC.)
@	AT
⊥	PERPENDICULAR
A	
A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABV	ABOVE
AC	ASPHALTIC CONCRETE
ACC	ACCESS(IBLE)
ACP	ALUMINUM COMPOSITE PANEL
ACST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADDM	ADDENDUM
ADH	ADHESIVE
ADJ	ADJUSTABLE
ADJC	ADJACENT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISHED GRADE
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
ALS	ASSISTED LISTENING SYSTEM
ALT	ALTERNATE
ALUM./AL.	ALUMINUM
ANC	ANCHOR, ANCHORAGE
APLD	APPLIED
APPRX	APPROXIMATELY
ARCH	ARCHITECT(URAL)
ASC	ABOVE SUSPENDED CEILING
ASF	ABOVE STAGE FINISH
ASPH	ASPHALT
ASSY	ASSEMBLY
ASYM	ASYMMETRICAL
AUTO	AUTOMATIC
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
B	
B	BOLT
BC	BACK OF CURB
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLW	BELOW
BLW CLG	BELOW CEILING
BLW FFLR	BELOW FINISH FLOOR
BM	BENCH MARK
BN	BOUNDARY NAILING
BO	BOTTOM OF
BOT	BOTTOM
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
BRK	BRICK
BRKT	BRACKET
BRS	BRASS
BRZ	BRONZE
BS	BOTH SIDES
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT UP ROOFING
BW	BOTH WAYS
C	
C&G	CURB AND GUTTER
CAB	CABINET
CAD	CADMIUM
CB	CATCH BASIN
CBB	CEMENTITIOUS BACKER BOARD
CBC	CALIFORNIA BUILDING CODE
CEM	CEMENT
CER	CERAMIC
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFLG	COUNTERFLASHING
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CG	CORNER GUARD
CHBD	CHALKBOARD
CHFR	CHAMFER
CI	CAST IRON
CIP	CAST IN PLACE
CIR	CIRCLE
CIRC	CIRCULAR, CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CL	CHAIN LINK OR CENTER LINE
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLL	CONTRACT LIMIT LINE
CLOS	CLOSURE
CLR	CLEAR(ANCE)
CLRM	CLASSROOM
CMP	CORRUGATED METAL PANEL
CMPST	COMPOSITION
CMU	CONCRETE MASONARY UNIT
CNCL	CONCEALED
CNR	CORNER
CNTR	COUNTER
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMP	COMPOSITE
COMPT	COMPARTMENT
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONTR	CONTRACT(OR)
COORD	COORDINATE
CORR	CORRIDOR
CPR	COPPER
CPRS	COMPRESS(ED), (ION), (IBLE)
CPT	CARPET
CRS	COLD ROLLED STEEL
CS	CAST STONE
CSG	CASING
CSK	COUNTERSUNK
CSMT	CASEMENT
CSWK	CASEWORK
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
CTF	CERAMIC TILE FLOOR
CTG	COATING
CTR	CENTER
CUFT	CUBIC FOOT
CUIN	CUBIC INCH
CUST	CUSTODIAN
CUYD	CUBIC YARD
CW	CURTAIN WALL
D	
D	DRAIN
d.	PENNYWEIGHT (NAILS)
DA	DOUBLE ACTING
DBL	DOUBLE
DEG	DEGREES

DEMO	DEMOLISH, DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DG	DECOMPOSED GRANITE
DH	DOUBLE HUNG
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DMPF	DAMPPROOFING
DMT	DEMOUNTABLE
DN	DOWN
DR	DOOR
DRB	DRAINBOARD
DRLV	DOOR LOUVER
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE
DVTL	DOVETAIL
DW	DISHWASHER
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	
(E)	EXISTING
E	EAST
EA	EACH
EAR	EXHAUST AIR REGISTER
EB	EXPANSION BOLT
EE	EACH END
EF	EACH FACE
EFS	EXTERIOR FINISH SYSTEM
EHD	ELECTRIC HAND DRYER
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EM	EXPANDED METAL
EMER	EMERGENCY
EN	EDGE NAILING
ENCL	ENCLOSE(URE)
ENGR	ENGINEER
ENTR	ENTRANCE
EP	ELECTRICAL PANELBOARD
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCUTCHEON
ESCL	ESCALATOR
ESMT	EASEMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWS	EYE WASH STATION
EXC	EXCAVATE
EXH	EXHAUST
EXP	EXPOSED
EXPN	EXPANSION
EXS	EXTRA STRONG
EXT	EXTERIOR
F	
(F)	FUTURE
F/F	FACE TO FACE
FA	FIRE ALARM
FAB	FABRIC
FBD	FIBERBOARD
FBRK	FIRE BRICK
FCBRK	FACE BRICK
FD	FLOOR DRAIN
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FFEL	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LINE
FGL	FIBERGLASS
FHC	FIRE HOUSE CABINET
FHMB	FLAT HEAD MACHINE BOLT
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLATHEAD WOOD SCREW
FIN	FINISH(ED)
FJT	FLUSH JOINT
FLASH	FLASHING
FLDG	FOLDING
FLG	FLOORING
FLR	FLOOR
FLUOR	FLUORESCENT
FN	FIELD NAILING
FOB	FACE OF BLOCK
FOC	FACE OF CONCRETE/CURB
FOF	FACE OF FINISH
FOG	FACE OF GRID
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FPL	FIREPLACE
FPRF	FIREPROOF(ING)
FR	FRAME(D), (ING)
FRG	FIBERGLASS REINFORCED GYPSUM
FRP	FIBERGLASS REINFORCED PLASTIC
FRTW	FIRE RETARDANT TREATED WOOD
FRZ	FREEZER
FS	FIRE SPRINKLER
FS	FAR SIDE
FSTN	FASTEN, FASTENER
FT	FOOT/FEET
FTG	FOOTING
FURG	FURRED, (ING)
FWC	FABRIC WALL COVERING
G	
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GI	GALVANIZED IRON
GL	GLASS
GLULAM	GLUE LAMINATED
GLZ	GLAZING
GLZCMU	GLAZED CONRETE MASONRY UNIT
GND	GROUND
GPC	GYPSUM PLASTER CEILING
GR	GRADE
GRBM	GRADE BEAM
GRLN	GRADE LINE
GSB	GYPSUM SHEATHING BOARD
GSM	GALVANIZED SHEET METAL
GSS	GALVANIZED STEEL SHEET
GST	GLAZED STRUCTURAL TILE
GT	GROUT
GVL	GRAVEL
GYP	GYPSUM
GYP BD	GYPSUM BOARD
H	
HB	HOSE BIB
HC	HOLLOW CORE

HD	HEAVY DUTY
HDAS	HEADED ANCHOR STUD
HDJT	HEAD JOINT
HDR	HEADER
HDW	HARDWARE
HDWD	HARDWOOD
HEX	HEXAGONAL
HGR	HANGER
HLDN	HOLD DOWN
HM	HOLLOW METAL
HMD	HOLOW METAL DOOR
HMDF	HOLLOW METAL DOOR AND FRAME
HMF	HOLLOW METAL FRAME
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HOUR
HT	HEIGHT
HTG	HEATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATER
I	
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE(D), (ING)
INFO	INFORMATION
INSTL	INSTALL
INSUL	INSULATE(D), (ION)
INT	INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
ISA	INTERNATIONAL SYMBOL OF ACCESSIBILITY
J	
JAN	JANITOR
JST	JOIST
JT	JOINT
K	
KIT	KITCHEN
KO	KNOCKOUT
KPL	KICKPLATE
L	
LAB	LABORATORY
LAD	LADDER
LAM	LAMINATE
LAV	LAVATORY
LB(S)	POUND(S)
LBL	LABEL
LBR	LUMBER
LDR	LEADER
LF	LINEAL FOOT
LG	LENGTH, LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LKNT	LOCKNUT
LKR	LOCKER
LKWASH	LOCKWASHER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMST	LIMSTONE
LNSCP	LANDSCAPE(D)
LNTL	LINTEL
LP	LIGHTPROOF
LPT	LOW POINT
LT	LIGHT
LTWT	LIGHTWEIGHT
LV	LOUVER VENT
LVL	LEVEL(ER)
LWC	LIGHTWEIGHT CONCRETE
LWIC	LIGHTWEIGHT INSULATING CONCRETE
M	
MAINT	MAINTAIN(ANCE)
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MEDICINE CABINET
MCB	METAL CORNER BEAD
MDO	MEDIUM DENSITY OVERLAID
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFD	METAL FLOOR DECKING
MFR	MANUFACTUR(ER)
MH	MANHOLE
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
ML	METAL LATH
MLDG	MOLDING
MLWK	MILLWORK
MO	MASONRY OPENING
MOD	MODULE(AR)
MR	MOISTURE RESISTANT
MRB	MARBLE
MRD	METAL ROOF DECKING
MS	MACHINE SCREW
MTD	MOUNTED
MTL	METAL
MTR	MORTAR
MULL	MULLION
N	
(N)	NEW
N	NORTH
NAT	NATURAL
NCOMBL	NONCOMBUSTIBLE
NE	NOT EXCEEDING
NF	NEAR FACE
NIC	NOT IN CONTRACT
NLB	NON-LOAD BEARING
NM	NONMETALLIC
NO	NUMBER
NOM	NOMINAL
NR	NOISE REDUCTION
NRC	NOISE REDUCTION COEFFICIENT
NRCA	NATIONAL ROOFING CONTRACTOR'S ASSOCIATION
NS	NEAR SIDE
NTS	NOT TO SCALE
O	
O/	OVER
O/O	OUT TO OUT
OA	OVERALL
OBS	OBSCURE
OC	ON CENTER
OCC	OCCUPANTS OR OCCUPANCY
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OFS	OUTSIDE FACE OF STUD
OHMS	OVALHEAD MACHINE SCREW
OHWS	OVALHEAD WOOD SCREW
OI	OWNER INSTALLED
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE

OPQ	OPAQUE
OPR	OPERABLE
ORD	OVERFLOW ROOF DRAIN
OSB	ORIENTED STRAND BOARD
OVFL	OVERFLOW
OVHD	OVERHEAD
P	
P	PAINT
PA	PUBLIC ADDRESS
PAR	PARALLEL
PAT	PATTERN
PB	PANIC BAR
PBD	PARTICLE BOARD
PC	PORTLAND CEMENT
PCC	PRECAST CONCRETE
PCP	PORTLAND CEMENT PLASTER
PED	PEDESTAL
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PGBD	PEGBOARD
PH	PHASE
PHS	PHILLIPS HEAD SCREW
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PLATE, PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PM	PRESSED METAL
PMF	PRESSED METAL FRAME
PNEU	PNEUMATIC
PNL	PANEL
PNT	PAINT(ED)
POL	POLISHED
POLY	POLYETHYLENE
PORC	PORCELAIN
PORT	PORTABLE
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PREFMD	PREFORMED
PRKG	PARKING
PRML	PREMOLDED
PROJ	PROJECT
PROP	PROPERTY
PSCONC	PRESTRESSED CONCRETE
PT	POINT
PTD	PAPER TOWEL DISPENSER
PTDF	PRESSURE TREATED DOUGLAS FIR
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PVC	POLYVINYL CHLORIDE
PVG	PAVE(D), (ING)
PVMT	PAVEMENT
Q	
QT	QUARRY TILE
QTB	QUARRY TILE BASE
QTF	QUARRY TILE FLOOR
QTR	QUARTER
QTY	QUANTITY
R	
R	RISER
RA	RETURN AIR
RAB	RABBET
RAD	RADIUS
RB	RESILIENT BASE
RBR	RUBBER
RCP	REINFORCED CONCRETE PIPE
RCVR	RECEIVER
RD	ROOF DRAIN
RDWY	ROADWAY
REBAR	REINFORCING STEEL BARS
REC	RECESSED
RECT	RECTANGULAR
RECYL	RECYCLING
REF	REFERENCE
REFL	REFLECT(ED), (IVE), (OR)
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REM	REMOVE(ABLE)
REP	REPAIR
REPL	REPLACE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISION(S), REVISED
RF	RESILIENT FLOORING
RFG	ROOFING
RFH	ROOF HATCH
RGDINS	RIGID INSULATION
RH	RIGHT HAND
RHMS	ROUND HEAD MACHINE SCREW
RHR	RIGHT HAND REVERSE
RHWS	ROUND HEAD WOOD SCREW
RL	ROOF LEADER
RLG	RAILING
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RR	RESTROOM
RS	ROUGH SAWN
RTF	RUBBER TILE FLOORING
RTU	ROOF TOP UNIT
RV	ROOF VENT
RVL	REVEAL
RVS	REVERSE (SIDE)
RVT	RIVET(ED)
RWD	REDWOOD
RWL	RAIN WATER LEADER
S	
S	SOUTH
S2S	SURFACED TWO SIDES
S4S	SURFACED FOUR SIDES
SA	SUPPLY AIR
SALV	SALVAGE
SAM	SELF-ADHERED MEMBRANE
SAT	SUSPENDED ACOUSTICAL TILE
SB	SPLASH BLOCK
SBSTR	SUBSTRATE
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCP	SCUPPER
SCRN	SCREEN
SD	STORM DRAIN
SDBL	SANDBLAST
SEC	SECONDS
SECT	SECTION
SEP	SEPERATE OR SEPERATION
SF	SQUARE FEET, STOREFRONT
SGL	SINGLE
SHR	SHOWER
SHT	SHEET(ING)
SHTG	SHEATHING
SHV	SHELVES(ING)
SIM	SIMILAR
SK	SINK
SKLT	SKYLIGHT
SLD	SEALED

SLDG	SLIDE(ING)
SLDR	SOLDER
SLNT	SEALANT
SLV	SLEEVE
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
SMLS	SEAMLESS
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPENSER
SNDINS	SOUND INSULATION
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SNT	SEALANT
SP	SPACES
SPC	SUSPENDED PLASTER CEILING
SPD	SOAP DISPENSER
SPEC	SPECIFICATION(S)
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
ST	STREET
STA	STATION
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STG	SEATING
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRAIGHT
STRUC	STRUCTURAL
STU	STRUCT
SUSP	SUSPENDED
SV	SHEET VINYL
SYMM	SYMMETRICAL
SYNTH	SYNTHETIC
SYS	SYSTEM
T	
T	TEMPERED, TOILET, TREAD
T24	TITLE 24
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
TB	THRU BOLT
TBE	THREADED BOTH ENDS
TD	TOWEL DISPENSER
TDR	TOWEL DISPENSER/RECEPTACLE
TEL	TELEPHONE
TEMP	TEMPORARY
TER	TERRAZZO
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
THD	THREAD(ED)
THERM	THERMAL
THK	THICK
THRES	THRESHOLD
THRU	THROUGH
TKBD	TACKBOARD
TMPD	TEMPERED
TO	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CURB OR TOP OF CONCRETE
TOF	TOP OF FOOTING
TOFF	TOP OF FINISH FLOOR
TOJ	TOP OF JOIST
TOL	TOLERANCE
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOPV	TOP OF PAVEMENT
TOS	TOP OF SHEATHING
TOSL	TOP OF SLAB
TOST	TOP OF STEEL
TOW	TOP OF WALL OR TOP OF WALK
TPD	TOILET PAPER DISPENSER
TPTN	TOILET PARTITION
TRANS	TRANSITION
TS	TUBE STEEL
TV	TELEVISION
TWLB	TOWEL BAR
TYP	TYPICAL
U	
UC	UNDERCUT
UGND	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
URM	UNREINFORCED MASONRY
UTIL	UTILITY
V	
VAR	VARIES
VB	VINYL BASE
VCT	VINYL COMPOSITION TITLE
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VF	VINYL FABRIC
VFAT	VINYL FACED ACOUSTIC TILE
VIF	VERIFY IN FIELD
VJ	V-JOINT(ED)
VNR	VENEER
VR	VAPOR RETARDER
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	
W	WEST
W.O.	WHERE OCCURS
W/	WITH
W/O	WITHOUT
W/W	WALL TO WALL
WBL	WOOD BLOCKING
WC	WATER CLOSET
WD	WOOD
WDP	WOOD PANELING
WDW	WINDOW
WF	WIDE FLANGE
WFS	WOOD FURRING STRIP
WGL	WIRED GLASS
WH	WATER HEATER
WH	WALL HUNG
WI	WROUGHT IRON
WID	WIDTH, WIDE
WLD	WELD(ED)
WM	WIRE MESH
WP	WATERPROOF(ING)
WPT	WORKING POINT
WR	WIRE ROPE
WS	WOOD SCREW
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
X	
XBRACE	CROSS BRACE
XFMR	TRANSFORMER
XSECT	CROSS SECTION
Y	
YCO	YARD CLEANOUT
YD	YARD

SUPPLEMENTAL GENERAL NOTES

1. THESE DRAWINGS DO NOT CONTAIN THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
2. LOCATIONS OF ALL UTILITIES SHOWN ARE APPROXIMATE AND CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID INTERCEPTING EXISTING PIPING OR CONDUITS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND TO PROTECT THEM FROM DAMAGE. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD ANY UNIDENTIFIED CONDITIONS BE DISCOVERED. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THIS WORK.
3. THESE DOCUMENTS AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF BCA ARCHITECTS, AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF BCA ARCHITECTS.
4. EACH BIDDER SHALL POSSESS AT THE TIME OF BID, A CLASS B OR THE APPROPRIATE CLASS C CONTRACTOR'S LICENSE PURSUANT TO PUBLIC CONTRACT CODE SECTION 3300 AND BUSINESS AND PROFESSIONS CODE SECTION 7028.15. THE SUCCESSFUL BIDDER MUST MAINTAIN THE LICENSE THROUGHOUT THE DURATION OF THIS CONTRACT.
5. FIRE SAFETY DURING CONSTRUCTION:
   - A. GENERAL: FIRE SAFETY DURING CONSTRUCTION SHALL COMPLY WITH 2019 CALIFORNIA FIRE CODE (CFC) CHAPTER 33, PART 9, TITLE 24 CCR
   - B. ACCESS ROADS: FIRE DEPARTMENT ACCESS ROADS SHALL BE ESTABLISHED AND MAINTAINED IN ACCORDANCE WITH CFC 503.
   - C. WATER SUPPLY: WATER MAINS AND HYDRANTS SHALL BE OPERATIONAL IN ACCORDANCE WITH CFC 507.
   - D. BUILDING ACCESS: ACCESS TO BUILDINGS FOR THE PURPOSE OF FIREFIGHTING SHALL BE PROVIDED. CONSTRUCTION MATERIAL SHALL NOT BLOCK ACCESS TO BUILDINGS, HYDRANTS OR FIRE APPLIANCES.
   - E. ALTERATIONS OF BUILDINGS: SHALL COMPLY WITH APPLICABLE PROVISIONS OF SECTION CFC 1103.
   - F. DEMOLITION OF BUILDINGS: SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF CFC CHAPTER 33.
   - G. FIRE WATCH: MAINTAIN FIRE WATCH WHEN REQUIRED BY THE BUILDING OFFICIAL AND WHEN EXISTING FIRE PROTECTION SYSTEMS ARE SHUT DOWN FOR ALTERATIONS. FIRE WATCH SHALL REMAIN IN EFFECT UNTIL EXISTING FIRE PROTECTION SYSTEMS ARE RETURNED TO SERVICE OR AS ALLOWED BY THE BUILDING OFFICIAL.
6. PENETRATIONS IN FIRE RATED MATERIALS OR ASSEMBLIES SHALL BE RESTORED TO EQUAL RATING. FIRE STOP SYSTEMS AS LISTED BY UNDERWRITERS LABORATORIES SHALL BE INSTALLED PER FIRE RESISTANCE DIRECTORY. FIRE STOP SYSTEMS SHALL BE AS SPECIFIED.
7. NONRESIDENTIAL ENERGY STANDARDS COMPLIANCE STATEMENT (TITLE 24, PART 6):
   - A. THE DESIGN INDICATED HEREIN COMPLIES WITH THE REQUIREMENTS OF THE ENERGY CONSERVATION STANDARDS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THE PROPOSED BUILDINGS WILL BE IN COMPLIANCE WITH THE ENERGY CONSERVATION STANDARDS PROVIDED THEY ARE BUILT ACCORDING TO THESE DRAWINGS AND SPECIFICATIONS AND PROVIDED ANY FUTURE IMPROVEMENTS ARE COMPLETED ACCORDING TO THE REQUIREMENTS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THESE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO INCLUDE ALL SIGNIFICANT ENERGY CONSERVATION FEATURES REQUIRED FOR COMPLIANCE WITH THE STANDARDS. BUILDING AREAS THAT ARE UNCONDITIONED AND/OR NOT SUBJECT TO THE STANDARDS ARE INDICATED ON THE DRAWINGS.
   - B. ENVELOPE MANDATORY MEASURES:
     - A. INSTALLED INSULATING MATERIALS SHALL HAVE BEEN CERTIFIED BY THE MANUFACTURER TO COMPLY WITH THE CALIFORNIA QUALITY STANDARDS FOR INSULATING MATERIAL.
     - B. ALL INSULATING MATERIALS SHALL BE INSTALLED IN COMPLIANCE WITH THE FLAME SPREAD RATING AND SMOKE DENSITY REQUIREMENTS OF TITLE 24, PART 2, CALIFORNIA CODE OF REGULATIONS, SECTIONS 719
     - C. ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE POTENTIAL AND OBSERVABLE SOURCES OF AIR LEAKAGE SHALL BE CAULKED, GASKETED, WEATHERSTRIPPED OR OTHERWISE SEALED.
     - D. SITE CONSTRUCTED DOORS, WINDOWS, AND SKYLIGHTS SHALL BE CAULKED BETWEEN THE UNIT AND THE BUILDING, AND SHALL BE WEATHERSTRIPPED (EXCEPT FOR UNFRAMED GLASS DOORS AND FIRE DOORS).
     - E. MANUFACTURED DOORS AND WINDOWS INSTALLED SHALL HAVE AIR INFILTRATION RATES CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS, SECTION 116(a)1.
     - F. MANUFACTURED FENESTRATION PRODUCTS IN THE ENVELOPE OF THE BUILDING, INCLUDING, BUT NOT LIMITED TO, WINDOWS, SLIDING GLASS DOORS, FRENCH DOORS, SKYLIGHTS, CURTAIN WALLS, AND GARDEN WINDOWS MUST BE LABELED FOR U-VALUE IN ACCORDANCE WITH THE (NFRC) NATIONAL FENESTRATION RATING COUNCIL'S INTERIM U-VALUE RATING PROCEDURE.
     - G. DEMISING WALL INSULATION SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF FRAMED WALLS (EXCEPT DOORS).
8. PROOF LOAD TESTS FOR EXPANSION TYPE ANCHOR BOLTS:
   - A. ANCHOR DIAMETER REFERS TO THE THREAD SIZE FOR THE WEDGE CATEGORY AND TO THE ANCHOR OUTSIDE DIAMETER FOR THE SLEEVE CATEGORY.
   - B. APPLY PROOF TEST LOADS TO WEDGE & SLEEVE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
   - C. FOR SLEEVE INTERNALLY THREADED CATEGORIES, VERIFY THAT THE ANCHOR IS NOT PREVENTED FROM WITHDRAWING BY A BASEPLATE OR OTHER FIXTURES. IF RESTRAINT IS FOUND, LOOSEN AND SHIM OR REMOVE FIXTURE(S) PRIOR TO TESTING.
   - D. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
   - E. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
   - F. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
     1. HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE. DROP-IN ANCHORS ARE ONLY TO BE TESTED WITH THIS METHOD.
     2. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS: WEDGE OR SLEEVE TYPE: ONE-HALF (1/2) TURN OF THE NUT. ONE-QUARTER (1/4) TURN OF THE NUT FOR THE 3/8 IN. SLEEVE ANCHOR ONLY.
   - G. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
   - H. ALL ANCHOR BOLTS OF THE EXPANSION TYPE (LOADED IN EITHER PULLOUT OR SHEAR) SHALL HAVE 50 PERCENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT ALLOWED BY THE TYPE OF SUBSTRATE AND DIAMETER OF BOLT LISTED BELOW UNDER TEST VALUES TABLE) PROOF TESTED IN TENSION TO TWICE THE ALLOWABLE TENSION LOAD. IF THERE ARE ANY FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 1910A.5.
   - I. ALL BOLTS MUST HAVE ICC APPROVAL.
   - J. ALL ANCHOR BOLTS OF THE EXPANSION TYPE SHALL BE ONE OF THE FOLLOWING:
     1. HILTI KB-TZ ANCHOR ICC NO. ESR 1917, REISSUED MAY 2021, SUBJECT TO RENEWAL MAY 2022
     2. HILTI KWIK BOLT TZ2, ESR-4266, SUBJECT TO RENEWAL DECEMBER 2021

MINIMUM TEST VALUES				
NORMAL WEIGHT OR LIGHTWEIGHT CONCRETE				
ANCHOR	WEDGE		SLEEVE	
DIA. (IN)	TORQUE (FT-LBS)	TORQUE (FT-LBS)	TENSION LOAD (LBS)	TORQUE (FT-LBS)
1/4	1050	5	540	4
3/8	1740	15	1680	35
1/2	1860	30	2410	60
5/8	3290	75	2590	100
3/4	5490	150	2900	120

9. POWDER-DRIVEN CONCRETE FASTENERS:
   - A. GENERAL: USE POWDER DRIVEN CONCRETE FASTENERS FOR TENSION LOADS IS LIMITED TO SUPPORT OF MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT.
   - B. ALLOWABLE LOADS: IN GENERAL, LOADS SHOULD BE LIMITED TO LESS THAN 100 POUNDS. HOWEVER GREATER LOADS MAY BE PERMITTED FOR SPECIAL CASES WHEN APPROVED BY THE CHECKING SUPERVISOR OR FIELD ENGINEER.
   - C. TESTING: THE OPERATOR, TOOL, AND FASTENER SHALL BE PREQUALIFIED BY THE PROJECT INSPECTOR. HE SHALL OBSERVE THE TESTING OF THE FIRST 10 FASTENER INSTALLATIONS. A TEST "PULL-OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD, OR 200 POUNDS, WHICHEVER IS GREATER, SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS, EXCEPT THAT WHEN THE DESIGN LOAD EXCEEDS 100 POUNDS, ONE HALF OF THE PINS SHALL BE TESTED. SHOULD FAILURE OCCUR ON ANY PIN TESTED, ALL INSTALLATIONS MUST BE TESTED AND UNFAIR PINS REPLACED.
   - D. ALL POWDER DRIVEN CONCRETE FASTENERS SHALL BE ONE OF THE FOLLOWING: HILTI, INC.
     1. DN PINS - WOOD PLATE - ICC NO. ESR 2379, REISSUED AUGUST 2020
        DN PINS - STEEL TRACK - ICC NO. ESR 2269, REISSUED FEBRUARY 2021
     2. ITW RAMSET/REDHEAD DRIVE PIN - WOOD PLATE - ICC NO. ESR 2690
        DRIVE PIN - STEEL TRACK - ICC NO. ESR 1955, REVISED MAY 2021
10. SPECIFICATIONS FOR AUTOMATIC END WELDED STUDS
   - A. MATERIAL: AUTOMATIC END WELDED STUDS SHALL BE NELSON GRANULAR FLUX-FILLED SHEAR CONNECTOR OR ANCHOR STUDS (OR APPROVED EQUAL). STUDS SHALL BE MANUFACTURED OF G-1015 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A108.
   - B. INSTALLATION: THE STUDS SHALL BE AUTOMATICALLY END WELDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN SUCH A MANNER AS TO PROVIDE COMPLETE FUSION BETWEEN THE END OF THE STUD AND THE PLATE. THERE SHOULD BE NO POROSITY OR EVIDENCE OF LACK OF FUSION BETWEEN THE WELDED END OF THE STUD AND THE PLATE. THE STUD SHALL DECREASE IN LENGTH DURING WELDING APPROXIMATELY 1/8" FOR 5/8" AND UNDER, AND 3/16" FOR OVER 5/8" DIAMETER. WELDING SHALL BE DONE ONLY BY QUALIFIED WELDERS APPROVED BY THE WELDING INSPECTOR.
   - C. INSPECTION AND TESTS: INSPECTION, IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 2212A.3 AND 1704A.3.1 OF ALL THE SHOP AND FIELD WELDING OPERATIONS FOR THE AUTOMATIC END WELDED STUDS SHALL BE MADE BY A QUALIFIED WELDING INSPECTOR (APPROVED BY THE DIVISION OF THE STATE ARCHITECT). THE TYPE AND CAPACITY OF THE WELDING EQUIPMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE CHECKED AND APPROVED BY A WELDING INSPECTOR.
   - D. AT THE BEGINNING OF EACH DAY'S WORK, A MINIMUM OF TWO TEST STUD WELDS SHALL BE MADE WITH THE EQUIPMENT TO BE USED TO METAL WHICH IS THE SAME AS THE ACTUAL WORK PIECE. THE TEST STUDS SHALL BE BEND TEST BY STRIKING THEM WITH A SUBJECTED TO A 900 HEAVY HAMMER. AFTER THE ABOVE TEST, THE WELD SECTION SHALL NOT EXHIBIT ANY TEARING OUT OR CRACKING.

SYMBOLS

N = PLAN NORTH ARROW
ADDITIONAL ARROW INDICATES TRUE NORTH

X = BUILDING SECTION NUMBER
AX.X = SHEET NUMBER

X = WALL SECTION NUMBER
AX.X = SHEET NUMBER

X = EXTERIOR ELEVATION NUMBER
AX.X = SHEET NUMBER

X = INTERIOR ELEVATION NUMBER
AX.X = SHEET NUMBER
N,S,E,W = INDICATES CARDINAL DIRECTION

GRID LINE, FACE OF STRUCTURE

GRID LINE, CENTER OF STRUCTURE

ELEVATION OR DATUM POINT

WP — WORK POINT

REFERENCE DETAIL
X = DETAIL DRAWING NUMBER
AX.X = SHEET NUMBER

20 / AX.X — MATCH LINE AND AREA DESIGNATOR
SHADED PORTION IS THE SIDE CONSIDERED

ROOM NAME A119 — ROOM NAME
AREA IDENTIFICATION:
A = BUILDING OR AREA DESIGNATION
1 = FLOOR NUMBER
19 = ROOM NUMBER

A — WINDOW, STOREFRONT, OR CURTAINWALL
SEE WINDOW SCHEDULE

A101A — DOOR NUMBER, SEE DOOR SCHEDULE

08 211 — KEYNOTE
08 = SPECIFICATION DIVISIONAL PREFIX
2 = SPECIFICATION SUBSECTION PREFIX
11 = NOTE NUMBER

1 — REVISION

102 / 36" x 24" x 24" / LOCKABLE — CASEWORK TAG
102 = ARCHITECTURAL WOODWORK STANDARD (AWS) NUMBER
36" x 24" x 24" = WIDTH x HEIGHT x DEPTH
LOCKABLE = MODIFYING NOTE

NOTE: FOR BASE CABINETS, HEIGHT DOES NOT INCLUDE COUNTERTOP THICKNESS - REFER TO PLANS FOR COUNTERTOP TYPE

41 — PATH OF EGRESS
41 = OCCUPANT LOAD
STARTING POINT OF PATH OF TRAVEL TO EXIT
MARKED BY DOT AT THE BEGINNING OF EGRESS LINE

P — PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP

S1 — SIGNAGE TAG

GENERAL NOTES

1. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AND SHALL HAVE VISITED THE CONSTRUCTION SITE. HE/SHE SHALL BE FAMILIAR WITH THE CONDITIONS UNDER WHICH HE/SHE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. THE GENERAL CONTRACTOR SHALL NOT DISPUTE, COMPLAIN OR ASSERT THAT THERE IS ANY MISUNDERSTANDING IN REGARDS TO LOCATION, EXTENT, NATURE OR AMOUNT OF WORK TO BE PERFORMED UNDER THIS CONTRACT DUE TO THE CONTRACTOR'S FAILURE TO INSPECT THE SITE. BIDDERS SHALL NOTIFY THE ARCHITECT OF ANY CONDITIONS, REQUIRING WORK, WHICH ARE NOT COVERED IN THE CONTRACT DOCUMENTS.
2. THERE WILL BE NO SUBSTITUTION FOR SPECIFIED ITEMS WITHOUT PRIOR APPROVAL UNLESS OTHERWISE NOTED. REQUESTS FOR SUBSTITUTIONS SHALL BE MADE IN ACCORDANCE WITH GENERAL CONDITIONS & DIVISION 1
3. THE GENERAL BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS REQUIRED BY GOVERNING AGENCIES IN ORDER TO PERFORM THE WORK.
4. THE FINAL LOCATION OF ALL ELECTRICAL AND SIGNAL EQUIPMENT, PANEL BOARDS, FIXTURES, ETC., SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.
5. DEFINITIONS
   - A. "TYPICAL" MEANS IDENTICAL FOR ALL CONDITIONS, UNLESS OTHERWISE NOTED.
   - B. "SIMILAR" MEANS COMPARABLE CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATIONS.
   - C. "PROVIDE" MEANS TO FURNISH AND INSTALL.
   - D. "FURNISH" MEANS TO FURNISH AND OTHERS WILL INSTALL.
6. DIMENSIONING RULES:
   - A. ALL HORIZONTAL DIMENSIONS SHALL BE TO CENTERLINE OF STUD OR COLUMN GRID LINE, U.O.N
   - B. DIMENSIONS NOTED "CLEAR", "CLR", OR "MINIMUM", "MIN" MUST BE PRECISELY MAINTAINED.
   - C. DIMENSIONS CAN NOT BE MODIFIED WITHOUT APPROVAL OF THE ARCHITECT UNLESS OTHERWISE NOTED.
   - D. VERTICAL DIMENSIONS ARE FROM TOP OF FLOOR SLAB UNLESS OTHERWISE NOTED.
   - E. DO NOT SCALE DRAWINGS. IF ANY ITEM OF WORK CANNOT BE LOCATED, DO NOT PROCEED WITH THE WORK WITHOUT THE ARCHITECT'S APPROVAL.
   - F. DIMENSIONS MARKED "V.I.F." OR "VERIFY" SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
   - G. VERIFY ALL ROUGH OPENING DIMENSIONS FOR FABRICATED ITEMS WITH THE MANUFACTURER PRIOR TO PROCEEDING WITH CONSTRUCTION.
   - H. DOOR AND WINDOW OPENINGS SHALL BE LOCATED ADJACENT TO PERPENDICULAR WALL UNLESS DIMENSIONED OTHERWISE.
7. PROVIDE REQUIRED BACKING, BLOCKING, AND BRACING FOR ALL WALL - MOUNTED FIXTURES, ACCESSORIES AND EQUIPMENT.
8. VERIFY AND COORDINATE WALLS THAT MAY REQUIRE NON-TYPICAL THICKNESS OR FRAMING DUE TO ELECTRICAL, MECHANICAL, PLUMBING, STRUCTURAL AND/OR EQUIPMENT REQUIREMENTS.
9. ALL GLAZING SHALL CONFORM TO FEDERAL GLAZING REGULATIONS AND CHAPTER 24, CBC.
10. ALL CONTRACTORS SHALL REMOVE TRASH AND DEBRIS STEMMING FROM THEIR WORK ON A DAILY BASIS. PROJECT SITE SHALL BE MAINTAINED IN A CLEAN AND ORDERLY CONDITION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL LEFT-OVER MATERIALS, DEBRIS, TOOLS AND EQUIPMENT INVOLVED IN HIS OPERATIONS AT THE CONCLUSION OF THE INSTALLATION. HE SHALL LEAVE ALL AREAS CLEAN AND FREE FROM DUST.
12. HAZARDOUS MATERIALS: THE ARCHITECT AND THE ARCHITECT'S CONSULTANTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL, DISPOSAL OF OR EXPOSURE OF PERSONS TO ASBESTOS OR HAZARDOUS OR TOXIC SUBSTANCES IN ANY FORM AT THE PROJECT SITE. PROFESSIONAL SERVICES RELATED OR IN ANY WAY CONNECTED WITH THE INVESTIGATION, DETECTION, ABATEMENT, REPLACEMENT, USE, SPECIFICATION, OR REMOVAL OF PRODUCTS, MATERIALS, OR PROCESSES CONTAINING ASBESTOS OR HAZARDOUS OR TOXIC MATERIALS ARE BEYOND THE SCOPE OF THIS AGREEMENT.
13. THE GENERAL CONTRACTOR & SUBCONTRACTORS ARE RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES IN ALL AREAS OF NEW WORK PRIOR TO COMMENCEMENT OF EXCAVATION. EXISTING UTILITIES SHOWN ON THE DRAWING ARE APPROXIMATE ROUTING LOCATION AS BEST DETERMINED FROM EXISTING DRAWINGS AND THE SCHOOL DISTRICT, BUT SHOULD NOT BE CONSTRUED TO REPRESENT ALL THE EXISTING UNDERGROUND UTILITIES.
14. ALL TEMPORARY WORK SHALL BE CONSIDERED A PART OF THIS CONTRACT AND NO EXTRA CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS AND INTENT OF THE PROJECT.
15. ALL WALL PENETRATIONS TO EXTERIOR WALLS SHALL BE SEALED AIR/WATER TIGHT. ALL INTERIOR PENETRATIONS SHALL BE SEALED TO PROVIDE A PROFESSIONAL AND FINISHED APPEARANCE.
16. THE DRAWINGS AND SPECIFICATIONS DO NOT UNDERTAKE TO SHOW OR LIST EVERY ITEM TO BE PROVIDED, BUT RATHER TO DEFINE THE REQUIREMENTS FOR A FULL AND WORKING SYSTEM FROM THE STANDPOINT OF THE END USER. FOR THIS REASON, WHEN AN ITEM NOT SHOWN OR LISTED IS CLEARLY NECESSARY FOR PROPER USE CONTROL/ OPERATION OF EQUIPMENT WHICH IS SHOWN OR LISTED, PROVIDE ALL ITEMS WHICH WILL ALLOW THE SYSTEM TO FUNCTION PROPERLY AT NO INCREASE IN CONTRACT PRICE ON TIME.
17. THE DETAILS REFLECT THE DESIGN INTENT FOR TYPICAL CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND SHALL INCLUDE, IN HIS SCOPE. THE COST FOR COMPLETE FINISHED INSTALLATIONS, INCLUDING ANOMALIES, OF ALL TRADES.
18. ALL WORK SHALL CONFORM TO CALIFORNIA CODES, TRADE STANDARDS WHICH GOVERN EACH PHASE OF THE PROJECT, AND ALL APPLICABLE LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
19. THIS DRAWING SET SHALL BE USED IN CONJUNCTION WITH THE CSI FORMAT PROJECT MANUAL PUBLISHED IN BOOK FORM, COMBINED, THEY ARE THE "CONTRACT DOCUMENTS".
20. NO WORK SHALL COMMENCE WITH UNAPPROVED MATERIALS. ANY WORK DONE WITH UNAPPROVED MATERIALS AND EQUIPMENT IS AT THE CONTRACTOR'S RISK. SEE SPECIFICATIONS FOR SUBMITTAL AND SUBSTITUTION REQUIREMENTS.
21. CONSTRUCTION MATERIAL STORED ON THE SITE SHALL BE PROPERLY STACKED AND PROTECTED TO PREVENT DAMAGE OR DETERIORATION. FAILURE IN THIS REGARD MAY BE CAUSE FOR REJECTION OF MATERIAL AND/OR WORK. SECURITY OF MATERIALS ARE THE SOLE RESPONSIBILITY OF CONTRACTOR.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE AND COSTS ATTRIBUTED TO RAIN WATER DAMAGE DURING THE DURATION OF THIS PROJECT.
23. PROTECT AREAS FROM DAMAGE WHICH MAY OCCUR DUE TO TEMPERATURES, WIND, DUST, WATER, ETC. PROVIDE AND MAINTAIN TEMPORARY BARRICADES, CLOSURE WALLS, ETC., AS REQUIRED DURING CONSTRUCTION.
24. MAINTAIN EXISTING PEDESTRIAN ACCESS ALONG EXISTING ADJACENT STREETS.
25. ALL PUBLIC IMPROVEMENTS SHALL BE MADE IN ACCORDANCE WITH THE LATEST ADOPTED CITY/COUNTY STANDARDS.
26. ALL TYPICAL DETAILS SHALL APPLY UNLESS NOTED OTHERWISE.
27. NOTIFY THE ARCHITECT IN WRITING AND SEEK CLARIFICATION IF ANY DISCREPANCIES OR OMISSIONS ARE FOUND. CONTRACTOR SHALL BE RESPONSIBLE FOR REMEDIAL WORK IF RELATED WORK IS CONTINUED AFTER A DISCREPANCY IS IDENTIFIED.
28. NEW FINISHES AND CONSTRUCTION SHALL BE PROTECTED BY THE CONTRACTOR FROM POTENTIAL DAMAGE CAUSED BY CONSTRUCTION ACTIVITY. DAMAGE TO FINISHES OR CONSTRUCTION SHALL BE REPAIRED OR REPLACED (OWNER'S DECISION) BY THE CONTRACTOR WITH IDENTICAL MATERIAL AND/OR FINISHES. CONTRACTOR SHALL MAKE AND MAINTAIN A PHOTOGRAPHIC RECORD NOTEBOOK WITH DATED/INDEXED PHOTOGRAPHS.
29. ALL NOTED WORK IS UNDERSTOOD TO BE NEW, UNLESS LABELED AS "(E)" OR "EXISTING"
30. CONTRACTOR OPERATIONS SHALL NOT BLOCK, HINDER, IMPEDE, OR OTHERWISE INHIBIT THE USE OF REQUIRED EXITS AT ANY TIME. CONTRACTORS SHALL MAINTAIN UNOBSTRUCTED ACECESS TO FIRE EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE PROTECTION FACILITIES, STAIRWAYS AND OTHER ACCESS ROUTES FOR FIER-FIGHTING EQUIPMENT OR PERSONNEL.

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APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT, BRIAN P WHITMORE, No. C 30345, Ren.: 9/30/23, STATE OF CALIFORNIA, DATE SIGNED: 10/15/2021	

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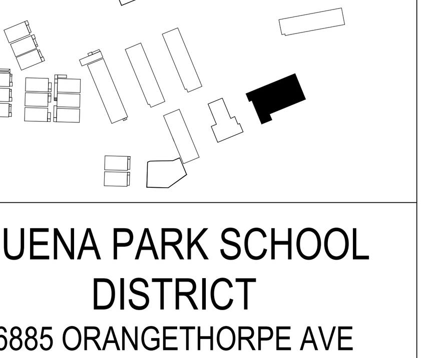
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

		DATE
●	DSA PLAN CHECK	08/16/2021
●	DSA BACK CHECK	10/19/2021
○	BIDDING	
○	CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

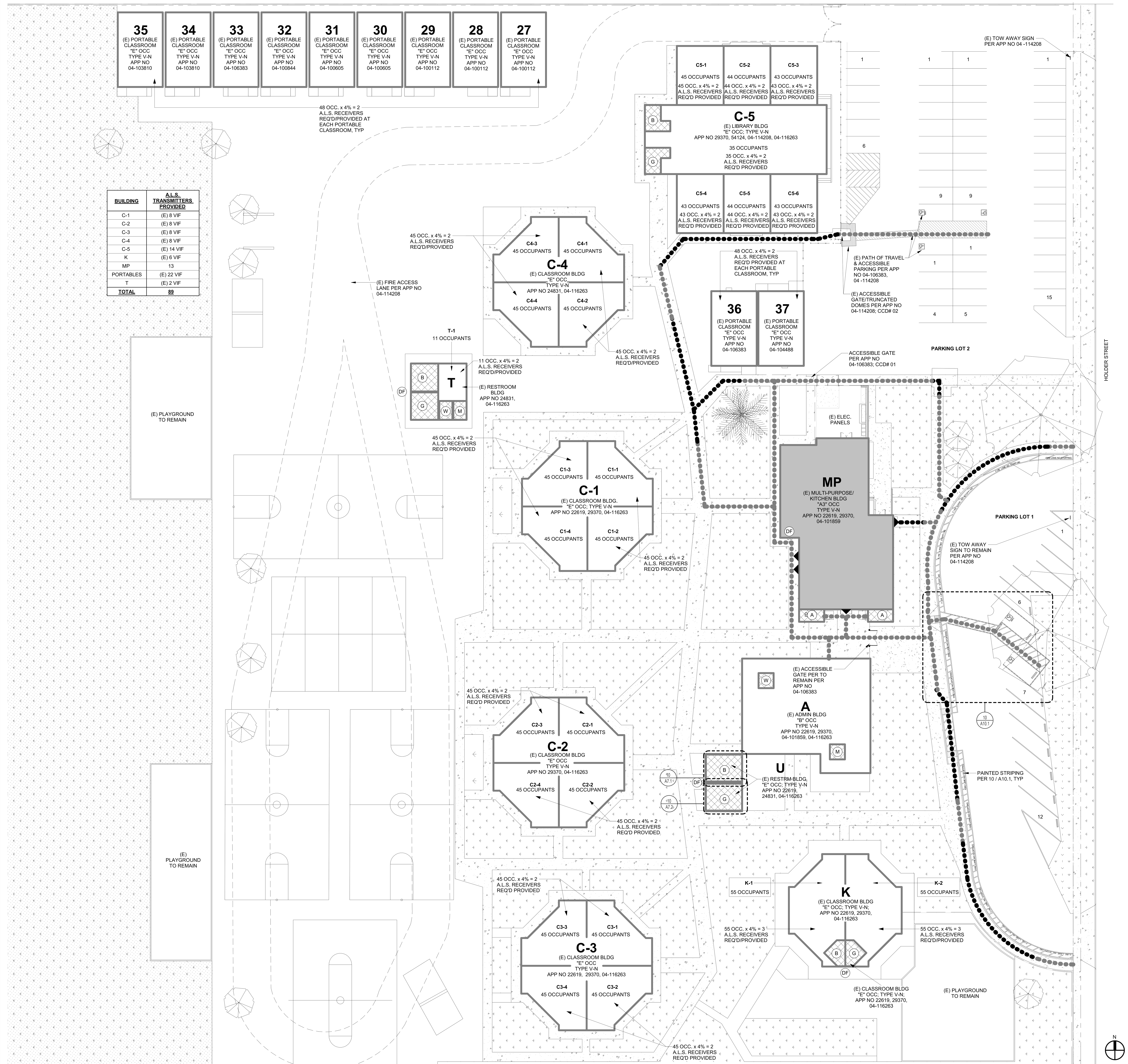
DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER ST.
BUENA PARK, CA 90620

GENERAL NOTES AND ABBREVIATIONS

Date	Project Number
10/19/2021	21008
Scale	Drawing Number
1/8" = 1'-0"	A0.2
Drawn: Author	Checked: Checker

PRINT DATE: 10/22/2021 4:21:08 PM
FILE PATH: C:\Users\seyedn\Documents\21008-Buena-Park-USD-Corey-MPR-A19_seyedn.rvt



BUILDING	A.L.S. TRANSMITTERS PROVIDED
C-1	(E) 8 VIF
C-2	(E) 8 VIF
C-3	(E) 8 VIF
C-4	(E) 8 VIF
C-5	(E) 14 VIF
K	(E) 6 VIF
MP	13
PORTABLES	(E) 22 VIF
T	(E) 2 VIF
TOTAL	**89**

CODE ANALYSIS SITE PLAN 1" = 20'-0" 10

PRINT DATE: 10/22/2021 4:21:11 PM
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DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

(BASED ON DSA PROCEDURE PR 15-01)

THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT WITH THE CBC HAVE BEEN IDENTIFIED AND THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR
A FINDING OF UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THE ITEMS SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

GENERAL NOTES

1. ALL (E) STRUCTURES AND ITEMS ON SITE ARE APPROXIMATE BASED ON DRAWINGS FROM OWNER.
2. ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAX. SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX. AND AT LEAST 48" WIDE. SURFACE IS STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
3. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80". SEE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT ON THIS SHEET FOR ADDITIONAL POT REQUIREMENTS.
4. ALL SIDEWALKS ALONG THE ACCESSIBLE ROUTE TO BE A MINIMUM OF 4'-0" WIDE, AND THERE SHALL BE NO DROP-OFFS OVER 4" AT EDGE OF WALK OR LANDING. WHERE A 4" DROP-OFF DOES OCCUR, PROVIDING A 6" HIGH WARNING CURB OR GUARD OR HANDRAIL. (SEE CBC SECTION 11B-303.5)
5. GATES ALONG ACCESSIBLE ROUTE SHALL MEET DOOR REQUIREMENTS PER CBC SECTION 11B-404 INCLUDING PANIC HARDWARE AND 10" MIN. SMOOTH BOTTOM OR KICK PLATE.
6. FOR GRATINGS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WALKWAY IN THE PATH OF TRAVEL, GRID/OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" MAXIMUM IN THE DIRECTION OF TRAFFIC FLOW.
7. 36" WIDE CONTINUOUS DETECTABLE WARNING SHALL BE USED WHERE THE PEDESTRIAN PATH CROSSES OR ADJOINS A VEHICULAR WAY (SUCH AS A DRIVEWAY) TO WARN OF POTENTIAL HAZARDS AS PER CBC 11B-705.
8. ALL EXTERIOR OUTWARD SWINGING DOORS TO HAVE A MINIMUM 5'-0" LEVEL LANDING.
9. ALL BUILDING ENTRANCES AND EXTERIOR GROUND LEVEL EXITS SHALL BE ACCESSIBLE.
10. "MANUAL CANE BOLTS, MANUALLY LOCKING HARDWARE OR CHAINS NOT ALLOWED ON GATES WITH PANIC HARDWARE"

ACCESSIBLE PARKING

BASED ON CBC TABLE 11B-208.2 "PARKING SPACES" AND 11B-208.2.4 "VAN PARKING SPACES"

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES	MINIMUM NUMBER OF REQUIRED VAN PARKING SPACES
1 TO 25	1	1 FOR EVERY SIX OR FRACTION OF SIX PARKING SPACES REQ'D BY CBC 11B-208.2
26 TO 50	2	
51 TO 75	3	
76 TO 100	4	
101 TO 150	5	

PARKING LOT 1

TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
11	1 REQ'D/1 PROVIDED	1 REQUIRED/1 PROVIDED

PARKING LOT 2

TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
48	2 REQUIRED/2 PROVIDED	1 REQUIRED/1 PROVIDED

DSA APPLICATION CERTIFICATION

BUILDING NO	APP NO	CERTIFICATION STATUS
A	22619-ORIG CONST	DSA APP'D-09/06/1962
	04-101859	12/16/2008
MP	22619-ORIG CONST	DSA APP'D-09/06/1962
	04-101859	12/16/2008
C-1, C-2, C-3, C-4	22619-ORIG CONST	DSA APP'D-09/06/1962
	04-116263	01/28/2019
C-5 / LIBRARY	29370	?
	54124	?
	04-114208	07/12/2016
	04-116263	01/28/2019
KINDERGARTEN	22619-ORIG CONST	DSA APP'D-09/06/1962
	04-116263	01/28/2019
T	24831	DSA APP'D-08/12/1964
	04-116263	01/28/2019
U	24831	DSA APP'D-08/12/1964
PORTABLE RM 27, 28, 29	04-100112	07/31/2017
PORTABLE RM 30, 31	04-100605	06/02/1999
PORTABLE RM 32	04-100844	05/17/1999
PORTABLE RM 33	04-106383	05/23/2014
PORTABLE RM 34, 35	04-103810	01/31/2017

LEGEND

(E) BUILDING, NOT UNDER SCOPE OF WORK

BUILDING UNDER SCOPE OF WORK

ACCESSIBLE RESTROOM FACILITIES:
(G) GIRLS' (W) GIRLS' (A) ALL-GENDER
(B) BOYS' (M) BOYS' (DF) (E) ACCESSIBLE DRINKING FOUNTAIN PER APP # 04-102455

PROPERTY LINE

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MIN. AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

(E) ACCESSIBLE PATH OF TRAVEL PER A#04-117607

ACCESSIBLE EXTERIOR EXIT DOORS, ENTRANCES/EGRESS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED: 10/15/2021	

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
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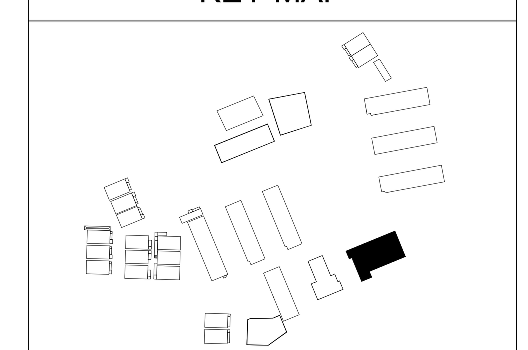
KEY MAP



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6885 ORANGETHORPE AVE
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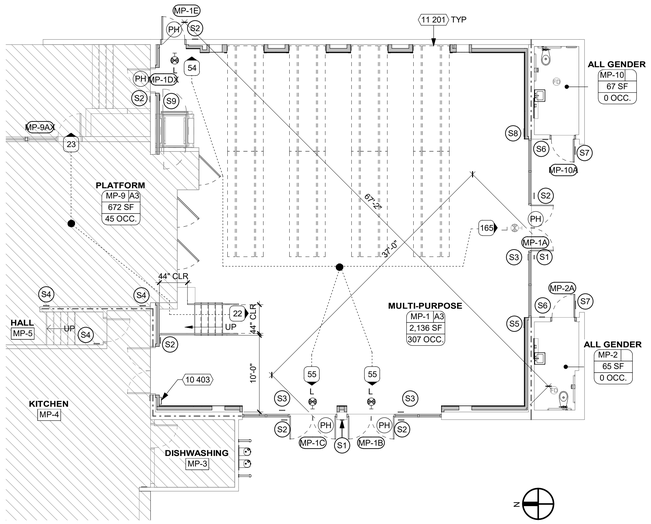
DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

7351 HOLDER ST.
BUENA PARK, CA 90620

CODE ANALYSIS SITE PLAN

Date	Project Number
10/19/2021	21008
Scale	Drawing Number
As indicated	A0.3
Drawn: Author	Checked: Checker



KEYNOTES

NUMBER	NOTE
10 403	FIRE EXTINGUISHER (2A-10B:C) IN SEMI-RECESSED CABINET PER 10/A10.2
11 201	DOUBLE-STACKED IN-WALL CAFETERIA TABLE/POCKET IN WOOD POCKET FRAMING PER

GENERAL NOTES

1. WHERE OCCUPANT LOAD SIGN IS REQUIRED, THE SIGN SHALL BE POSTED NEAR THE MAIN EXIT FROM THE ROOM.
2. REQUIRED MEANS OF EGRESS SHALL BE MAINTAINED DURING CONSTRUCTION AND DEMOLITION PER CFC 3311.2.
3. MEANS OF EGRESS ILLUMINATION SHALL BE PROVIDED PER CFC 1013.3.
4. NUMBER OF EXITS SHOWN COMPLY WITH THE MINIMUM REQUIREMENTS SET FORTH IN CBC SECTION 1006.2. WHEN THERE ARE MORE THAN ONE REQUIRED EXIT, THE EXITS SHALL BE LOCATED PER SECTION 1007.1.1. SEE CALCS BELOW.
5. NO EXIT DOOR SHALL BE LESS THAN 32" CLEAR WIDTH.

OCCUPANCY CLASS

ROOM #	ROOM NAME	OCCUPANCY CLASS	SQ. FT. (NET)
MP-2	ALL GENDER		65 SF
MP-5	HALL		62 SF
MP-6	GIRLS		217 SF
MP-10	ALL GENDER		67 SF
MP-11	BOYS		215 SF
U-B	BOYS' RR		219 SF
U-G	GIRLS' RR		221 SF
			1,066 SF
MP-1	MULTI-PURPOSE	A3	2,136 SF
MP-9	PLATFORM	A3	672 SF
A3			2,808 SF
TOTAL AREA (NET)			3,875 SF

OCCUPANT LOAD CHART

ROOM NUMBER	ROOM NAME	FUNCTION OF SPACE (CBC TABLE 1004.1.2)	SQ. FT. (NET)	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
MP-1	MULTI-PURPOSE	Assembly Concentrated (chairs only - not fixed)	2,136 SF	7	306
MP-2	ALL GENDER	(none)	65 SF		
MP-5	HALL	Accessory Storage Areas, Mechanical Equipment Room	62 SF	300	1
MP-6	GIRLS	(none)	217 SF		
MP-9	PLATFORM	Assembly Unconcentrated (tables and chairs)	672 SF	15	45
MP-10	ALL GENDER	(none)	67 SF		
MP-11	BOYS	(none)	215 SF		
U-B	BOYS' RR	(none)	219 SF		
U-G	GIRLS' RR	(none)	221 SF		
			3,875 SF		352

EXIT WIDTH CALCULATIONS

NOTE: EXIT WIDTH CALCULATIONS ARE PER CBC 1005.3.2. IF CALCULATED EXITING WIDTH IS LESS THAN 32", THEN 32" IS USED AS THE MINIMUM VALUE PER CBC 11B-403.5.1 (EXCEPTION 1). REFER TO "EXIT WIDTH PROVIDED" COLUMN BELOW AND DOOR SCHEDULE ON SHEET A9.1 FOR MORE INFORMATION.

MARK	DOOR WIDTH	EXITING OCCUPANTS	MINIMUM EXIT WIDTH REQUIRED (EXITING OCCUPANTS * .2)	EXIT WIDTH PROVIDED
MP-1A	6'-0"	165	33"	68"
MP-1B	6'-0"	55	32"	68"
MP-1C	6'-0"	55	32"	68"
MP-1E	3'-0"	33	32"	32"
MP-2A	3'-0"	0	32"	32"
MP-9F	3'-0"			32"
MP-10A	3'-0"	0	32"	32"

SIGNAGE LEGEND

- S1 ACCESSIBLE ENTRANCE SIGN, SEE DETAIL 9 / A10.3
- S2 ROOM IDENTIFICATION SIGN, SEE DETAIL 10 / A10.3
- S3 EXIT SIGN, SEE DETAIL 11 / A10.3
- S4 EXIT ROUTE SIGN, SEE DETAIL 11 / A10.3
- S5 MAXIMUM OCCUPANCY SIGN, SEE DETAIL 13 / A10.3
- S6 ALL GENDER WALL MOUNTED SIGN, SEE DETAIL 14 / A10.3
- S7 ALL GENDER RESTROOM DOOR SIGN, SEE DETAIL 15 / A10.3
- S8 ASSISTED LISTENING DEVISE SIGN, SEE DETAIL 19 / A10.3
- S9 INACCESSIBLE EXIT SIGN, SEE DETAIL 20 / A10.3

ALS DEVICE RECEIVER CALCULATION

ROOM NAME	ROOM NO	OCCUPANTS	RECEIVERS REQ'D.
MULTI-PURPOSE	01	307 OCC.	13 RECEIVERS REQ'D.

NOTE:
307 OCC X 4% = 13 ASSISTED LISTENING DEVICE RECEIVERS REQ.'D / PROVIDED. OF THE 13 ALS DEVICE RECEIVERS PROVIDED, 25% OF RECEIVERS SHALL BE HEARING-AID COMPATIBLE IN ACCORDANCE WITH CBC SECTION 11B-216.10 & 11B-703.7.2.4 = 4 HEARING-AID COMPATIBLE RECEIVERS REQUIRED

PROVIDE A MINIMUM OF 2 TRANSMITTERS, OR AS MANY AS REQUIRED PER MFR.

LEGEND

WORKROOM
A101 | B
1,500 SF
10 OCC.
{15}

AREA IDENTITY/ CODE ANALYSIS
WORKROOM = ROOM NAME
A101 = ROOM NUMBER
B = OCCUPANCY CLASS (CBC 302)
1,500 SF = FLOOR AREA
10 = OCCUPANT LOAD
{15} = OCCUPANT LOAD PLUS ANCILLARY AS OCCURS

PATH OF EGRESS
41 = OCCUPANT LOAD (STARTING POINT OF PATH OF TRAVEL TO EXIT MARKED BY DOT AT THE BEGINNING OF EGRESS LINE)

PH — PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP

NOT IN CONTRACT

EXISTING ILLUMINATED EXIT SIGN
EXIT SIGNAGE TO ACCOMPANY ALL ILLUMINATED EXIT SIGNS.
L = LOW LEVEL ILLUMINATED EXIT SIGN (WHERE OCCURS)

ILLUMINATED EXIT SIGN
EXIT SIGNAGE TO ACCOMPANY ALL ILLUMINATED EXIT SIGNS.
L = LOW LEVEL ILLUMINATED EXIT SIGN (WHERE OCCURS)

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ARCHITECT	ENGINEER
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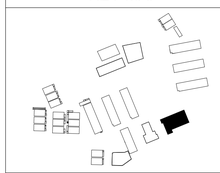
KEY MAP



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EXITING FLOOR PLAN

Date 10/19/2021	Project Number 21008
Scale 1/8" = 1'-0"	Drawing Number A0.4
Drawn / Author	Checked / Checker

EXITING FLOOR PLAN 1/8" = 1'-0" 10

PRINT DATE: 10/22/2021 4:21:14 PM
FILE PATH: C:\Users\seyedn\Documents\21008-Buena-Park-USD-Corey-MPR-A19_seyedn.rvt

GENERAL NOTES:

1. WORK SHOWN HEREON SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," LATEST EDITION AND SUPPLEMENTS, THE 2019 CALIFORNIA BUILDING CODE (EXCAVATION AND GRADING), AND CITY OF BUENA PARK LOCAL ORDINANCES AS APPLICABLE.
2. EXISTING TOPOGRAPHY SHOWN HEREON WAS TAKEN FROM A SURVEY DATED JUNE 17, 2021 AND REVISED ON JUNE 25, 2021 BY HAHN & ASSOCIATES, INC.
3. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
4. PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL HIRE A LICENSED LAND SURVEYOR TO VERIFY THAT THE ELEVATIONS SHOWN ON THE GRADING PLAN AT THE JOIN TO THE EXISTING IMPROVEMENTS MATCHES THE EXISTING ELEVATIONS IN THE FIELD. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES, AND SHALL NOT BEGIN CONSTRUCTION, IN THE AREAS OF DISCREPANCIES UNTIL THE CHANGED CONDITIONS HAVE BEEN EVALUATED.
5. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
6. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.
7. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
8. IF AT ANY TIME DURING GRADING OPERATIONS, ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, GRADING IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED.
9. THE PROPOSED GRADE IS THE FINAL GRADE AND NOT THE ROUGH GRADE. THE CONTRACTOR SHALL SUBTRACT THE THICKNESS OF THE PAVED SECTION AND/OR LANDSCAPE TOPSOIL SECTION TO ARRIVE AT THE ROUGH GRADE ELEVATION.
10. STRAIGHT GRADE SHALL BE MAINTAINED BETWEEN CONTOUR LINES AND SPOT ELEVATIONS UNLESS OTHERWISE SHOWN ON THE PLANS.
11. ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT APPROVED DISPOSAL SITES. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FOR THE TRANSPORTATION OF MATERIAL TO AND FROM THE SITE.
12. ALL FILL SOILS OR SOILS DISTURBED OR OVEREXCAVATED DURING CONSTRUCTION SHALL BE COMPACTED NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D-1557.
13. CONSTRUCTION STAKING FOR IMPROVEMENTS SHOWN ON THESE PLANS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR.
14. THE CONTRACTOR SHALL REPLACE ALL EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING, INCLUDING PERMANENT TRENCH RESURFACING.
15. CONTRACTOR TO CONTACT UNDERGROUND SERVICE ALERT (800-227-2600) PRIOR TO EXCAVATION.
16. ALL DIMENSIONS ARE IN FEET OR DECIMALS THEREOF.
17. ALL CURB DIMENSIONS AND RADII ARE TO PAVEMENT FACE OF CURB.
18. CONTRACTOR TO BE AWARE OF ALL OVERHEAD LINES AT ALL TIMES, SO AS NOT TO DISTURB THEM.
19. WATER SHALL BE PROVIDED ONSITE AND USED TO CONTROL DUST DURING CONSTRUCTION OPERATIONS.
20. CONTRACTOR SHALL OBTAIN ANY NECESSARY PERMITS FROM THE CITY OF BUENA PARK FOR ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
21. BLANKET PROTECTION SHALL BE PROVIDED FOR ALL UTILITY PIPES AND CONDUITS UNDER DRIVEWAYS, ROADWAYS, PARKING LOTS, AND OTHER VEHICULAR PATH OF TRAVEL PER APWA STANDARD PLAN 225-1 WHERE THE MINIMUM COVER OVER THE PIPES AND CONDUITS IS LESS THAN 36".
22. CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES SUCH AS MANHOLE COVERS, CLEAN OUTLET COVERS, METER BOXES, PULL BOXES, VALVE BOXES, AREA DRAINS, CATCH BASINS, FIRE HYDRANTS AND OTHER SURFACE UTILITIES TO NEW FINISH GRADE. NOT ALL EXISTING SURFACE UTILITIES MAY HAVE BEEN IDENTIFIED ON THESE PLANS THAT MAY REQUIRE ADJUSTMENT TO NEW GRADE, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTEND OF WORK REQUIRED.

CALIFORNIA 811
CALL UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA FOR UNDERGROUND LOCATING 48 HOURS BEFORE YOU DIG!
www.digalert.org

IMPORTANT NOTICE
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIGALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIGALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 811 TWO WORKING DAYS BEFORE YOU DIG

LEGEND:

GENERAL
- LIMIT OF WORK
- PROPERTY LINE

ANNOTATION
- 100.00XX — PROPOSED SURFACE ELEVATION/UTILITY ELEVATION
- (100.00)XX — EXISTING SURFACE ELEVATION/UTILITY ELEVATION
- XX — CONSTRUCTION NOTE
- 2.0% — FLOW (DIRECTION AND GRADE)
- 2:1 — SLOPE (DIRECTION AND RUN:RISE)

SITE
- BACK OF CURB/FACE OF CURB

EROSION CONTROL
- GRAVEL BAGS
- FIBER ROLL
- EXISTING DRAINAGE FLOW DIRECTION

GRADING
- 100 — PROPOSED MAJOR CONTOUR
- 102 — PROPOSED MINOR CONTOUR
- FLOW LINE
- GB — GRADE BREAK LINE
- R — RIDGE LINE
- SAWCUT / JOIN LINE

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON THE CALIFORNIA STATE PLANE COORDINATE SYSTEM – NAD 83 (2011) ZONE 6, DERIVED FROM OBSERVATIONS TAKEN ON JUNE 7, 2021 USING SOPAC'S CALIFORNIA REAL TIME NETWORK. THE BEARING BETWEEN CORS "SBCC" AND "CNPP", BEING N8°58'04"W, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCHMARK:

THE ELEVATION OF 55.397 ON BENCH MARK NO. 1A-146-05 (DESCRIBED BY OCS 2005 – FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPED "1A-146-05", SET IN THE NORTHWESTERLY CORNER OF A 4.0 FT. BY 11.0 FT CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF VALLEY VIEW STREET AND ORANGETHORPE AVENUE, 48 FT. EASTERLY OF THE CENTERLINE OF VALLEY VIEW AND 115 FT. SOUTHERLY OF THE CENTERLINE OF ORANGETHORPE. MONUMENT IS SET LEVEL WITH THE SIDEWALK) NAVD 1988 DATUM, 2005 YEAR LEVELED (1995) ADJUSTMENT, AS SHOWN IN ORANGE COUNTY PUBLIC WORKS VERTICAL CONTROL DATA SHEET WAS USED AS ELEVATION DATUM FOR THIS SURVEY.

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	(N)	NORTH
BW	BACK OF WALK	NTS	NOT TO SCALE
BLDG	BUILDING	PA	PLANTER AREA
BM	BENCH MARK	POC	POINT OF CONNECTION
BOS	BOTTOM OF STAIRS	PIV	POST INDICATOR VALVE
BMP	BEST MANAGEMENT PRACTICES	PCC	PORTLAND CEMENT CONCRETE
CB	CATCH BASIN	PRV	PRESSURE REDUCING VALVE
CI	CAST IRON	PVC	POLYVINYL CHLORIDE
CL, ℄	CENTER LINE	PL, ⅊	PROPERTY LINE
CMU	CONCRETE MASONRY UNIT	R=	RADIUS
CO	CLEANOUT	RCIP	RECTANGULAR CAST IRON PIPE
CONC	CONCRETE	RD	ROOF DRAIN
CF	CURB FACE	RW, R/W	RIGHT-OF-WAY
DW	DOMESTIC WATER	(S)	SOUTH
(E)	EAST	S=	SLOPE EQUALS
EG	EDGE OF GUTTER	SD	STORM DRAIN
EL., ELEV	ELEVATION	SSMH	SANITARY SEWER MANHOLE
ELEC	ELECTRIC, ELECTRICAL	SS	SANITARY SEWER
EX., EXIST.	EXISTING	STD	STANDARD
FDC	FIRE DEPARTMENT CONNECTION	SDMH	STORM DRAIN MANHOLE
FF	FINISHED FLOOR	TC	TOP OF CURB
FG	FINISHED GRADE (LANDSCAPE)	TEL	TELEPHONE
FS	FINISHED SURFACE (HARDSCAPE)	TG	TOP OF GRATE
FH	FIRE HYDRANT	TOS	TOP OF STAIRS
FL	FLOW LINE	TW	TOP OF WALL
FT	FOOT OR FEET	TS	TRAFFIC SIGNAL
FU	FIXTURE UNITS	TSB	TRAFFIC SIGNAL BOX
GV	GATE VALVE	TYP	TYPICAL
FW	FIRE WATER	TV	TELEVISION
GPM	GALLONS PER MINUTE	V.I.F.	VERIFY IN FIELD
HDPE	HIGH DENSITY POLYETHYLENE	VLT	VAULT
HP, (HP)	HIGH POINT	VCP	VITRIFIED CLAY PIPE
INV.	INVERT	(W)	WEST
LP, (LP)	LOW POINT	W	WATER
MAX.	MAXIMUM	WM	WATER METER
MIN.	MINIMUM	WV	WATER VALVE
MH	MANHOLE		

LEGEND:

- COLD MILL AND OVERLAY
- CONCRETE PAVEMENT (CONCRETE MIX 560-C 3250)

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SHEET INDEX:

CIVIL DRAWINGS	
C0.01	TITLE SHEET
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.30	GRADING PLAN
C1.31	GRADING PLAN
C1.40	PAVING PLAN
C1.41	PAVING PLAN
C5.00	CIVIL DETAILS

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APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ALI KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA DATE SIGNED: 10/15/2021

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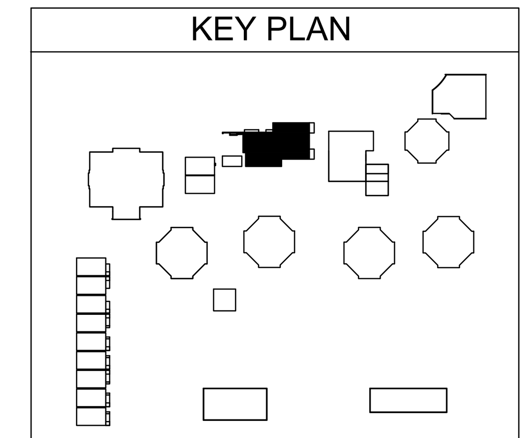
KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

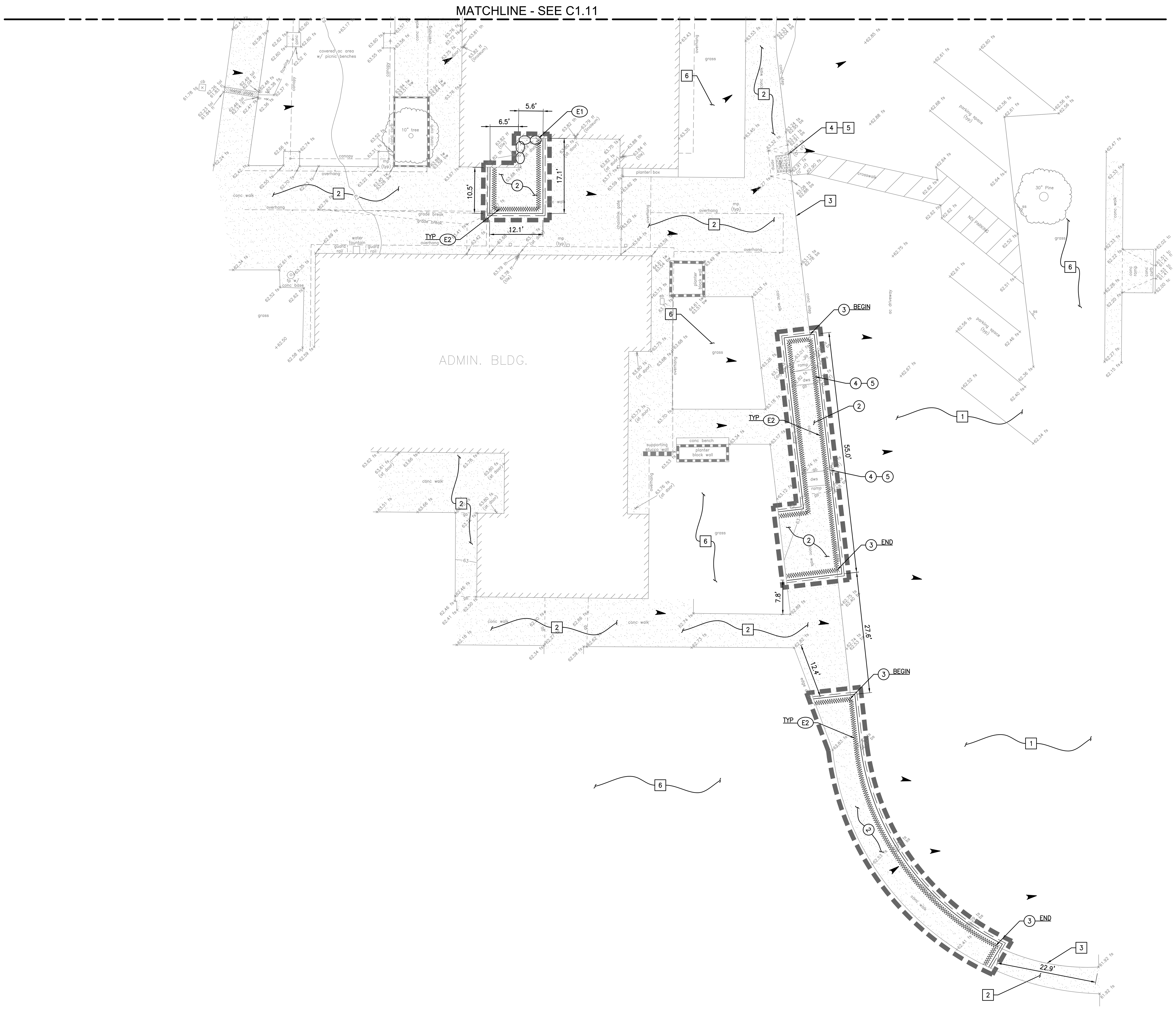
DSA BACKCHECK

COREY ES MP BUILDING MODERNIZATION
7351 HOLDER ST.
BUENA PARK, CA 90620

TITLE SHEET

Date: 10/19/2021	Project Number: 2100005
Scale: AS NOTED	Drawing Number
Drawn: TN / Checked: JP	C0.01

Drawing: P:\2021\2100005 -19- BPSD Corey ES MP Mod\DWG\SHEET\2100005C-C0.01GN.dwg Last Plotted: Friday, October 15, 2021 5:35:48 PM By: April Santonil



LEGEND:

— — — —	PROPERTY LINE
▬ ▬ ▬ ▬	LIMIT LINE OF EROSION CONTROL
◯◯◯◯	GRAVEL BAGS
XXXXXXXX	FIBER ROLL
➤	SURFACE FLOW DIRECTION
— — — —	SAWCUT LINE

GENERAL DEMOLITION NOTES:

1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN TO BE PROTECTED, RELOCATED AND/OR SALVAGED.
2. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
4. NOT ALL EXISTING SITE CONDITIONS AND IMPROVEMENTS MAY HAVE BEEN SHOWN ON DEMOLITION PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTENT OF DEMOLITION WORK REQUIRED FOR THE IMPROVEMENTS SHOWN ON THE CONTRACT PLANS.
5. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
7. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
8. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
9. DEMOLITION IS LIMITED TO WITHIN DEMOLITION LIMIT LINE UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK DEMOLITION OF ALL EXISTING IMPROVEMENTS REQUIRED FOR THE CONSTRUCTION OF THE NEW IMPROVEMENTS SHOWN ON THE CONTRACT PLANS, REGARDLESS OF IF THE DEMOLITION AND REMOVAL OF THE EXISTING IMPROVEMENTS REQUIRED FOR NEW CONSTRUCTION IS EXPLICITLY SHOWN ON THESE PLANS TO BE DEMOLISHED AND REMOVED.
11. DEMOLITION CALLOUTS IN THIS SECTION ARE REPRESENTATIVE OF WHAT IS TO BE DONE, NOT AN ITEMIZED ACCOUNTING FOR EACH PIPE, CATCH BASIN, MANHOLE, VAULT, ETC, THAT IS TO BE DEMOLISHED, REMOVED AND DISPOSED OF.
12. CONTRACTOR SHALL FIELD VERIFY AND FULLY UNDERSTAND THE OPERATION OF THE EXISTING IRRIGATION SYSTEM. CONTRACTOR SHALL RELOCATE THE EXISTING IRRIGATION CONTROL VALVE FOR CONSTRUCTION OF PROPOSED IMPROVEMENTS SHOWN ON THE CONTRACT DOCUMENTS TO THE SATISFACTION OF THE OWNER. THE CONTRACTOR SHALL MAKE ALL NECESSARY INSTALLATION NEEDED CAUSED BY RELOCATION OF EXISTING CONTROL VALVE, FOR PROPER OPERATION OF EXISTING IRRIGATION SYSTEM.

DEMOLITION NOTES:

PROTECT-IN-PLACE

1. ASPHALT PAVEMENT
2. CONCRETE PAVEMENT
3. CONCRETE CURB
4. CONCRETE RAMP
5. TRUNCATED DOMES
6. LANDSCAPING

REMOVE & DEMOLISH

1. ASPHALT PAVEMENT
2. CONCRETE PAVEMENT
3. CONCRETE CURB
4. CONCRETE RAMP
5. TRUNCATED DOMES

REMOVE AND RELOCATE

1. IRRIGATION CONTROL VALVE
2. IRRIGATION BACKFLOW PREVENTER

EROSION CONTROL NOTES:

* FINAL BMP LOCATION TO BE DETERMINED BY THE CONTRACTOR.

E1 PLACE GRAVEL BAGS TRIPLE ROW PER CASQA BMP FACT SHEET SE6.

E2 PLACE FIBER ROLL PER CASQA BMP FACT SHEET SE5.

BMP NOTES:

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA 2009, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTORS):

<u>EROSION CONTROL</u>

EC1–SCHEDULING
EC2–PRESERVATION OF EXISTING VEGETATION
EC3–HYDRAULIC MULCH
~~EC4–HYDROSEEDING~~
~~EC5–SOIL BINDERS~~
~~EC6–STRAW MULCH~~
EC7–GEOTEXTILES
~~EC8–WOOD MULCHING~~
~~EC9–EARTH DIKES AND DRAINAGE SWALES~~
~~EC10–VELOCITY DISSIPATION DEVICES~~
~~EC11–SLOPE DRAINS~~
~~EC12–STREAMBANK STABILIZATION~~
~~EC13–POLYCRYLAMIDE~~

<u>TEMPORARY SEDIMENT CONTROL</u>

~~SE1–SILT FENCE~~
~~SE2–SEDIMENT BASIN~~
~~SE3–SEDIMENT TRAP~~
~~SE4–CHECK DAM~~
SE5–FIBER ROLLS
SE6–GRAVEL BAG BERM
~~SE7–STREET SWEEPING AND VACUUMING~~
~~SE8–SANDBAG BARRIER~~
~~SE9–STRAW BALE BARRIER~~
~~SE10–STORM DRAIN INLET PROTECTION~~
~~SE11–CHEMICAL TREATMENT~~

<u>EQUIPMENT TRACKING CONTROL</u>

TC1–STABILIZED CONSTRUCTION ENTRANCE/EXIT
~~TC2–STABILIZED CONSTRUCTION ROADWAY~~
~~TC3–ENTRANCE/OUTLET TIRE WASH~~

<u>WIND EROSION CONTROL</u>

WE1–WIND EROSION CONTROL

<u>NON–STORMWATER MANAGEMENT</u>

NS1–WATER CONSERVATION PRACTICES
~~NS2–DEWATERING OPERATIONS~~
~~NS3–PAVING AND GRINDING OPERATIONS~~
~~NS4–TEMPORARY STREAM CROSSING~~
~~NS5–CLEAR WATER DIVERSION~~
~~NS6–ILLICIT CONNECTION/DISCHARGE~~
~~NS7–POTABLE WATER/IRRIGATION~~
~~NS8–VEHICLE AND EQUIPMENT CLEANING~~
~~NS9–VEHICLE AND EQUIPMENT FUELING~~
~~NS10–VEHICLE AND EQUIPMENT MAINTENANCE~~
~~NS11–PILE DRIVING OPERATIONS~~
NS12–CONCRETE CURING
NS13–CONCRETE FINISHING
~~NS14–MATERIAL OVER WATER~~
~~NS15–DEMOLITION ADJACENT TO WATER~~
~~NS16–TEMPORARY BATCH PLANTS~~

<u>WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL</u>

WM1–MATERIAL DELIVERY AND STORAGE
WM2–MATERIAL USE
~~WM3–STOCKPILE MANAGEMENT~~
WM4–SPILL PREVENTION AND CONTROL
WM5–SOLID WASTE MANAGEMENT
WM6–HAZARDOUS WASTE MANAGEMENT
~~WM7–CONTAMINATED SOIL MANAGEMENT~~
WM8–CONCRETE WASTE MANAGEMENT
WM9–SANITARY/SEPTIC WASTE MANAGEMENT
WM10–LIQUID WASTE MANAGEMENT

PLAN
SCALE: 1" = 10'–0"
0 5' 10' 20'
GRAPHIC SCALE

BMP NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL SILT AND MUD ON ADJACENT STREET(S), DUE TO CONSTRUCTION VEHICLES OR ANY OTHER CONSTRUCTION ACTIVITY, AT THE END OF EACH DAY, OR AFTER A STORM EVENT THAT CAUSES A BREECH IN INSTALLED CONSTRUCTION BMP'S WHICH MAY COMPROMISE STORM WATER QUALITY WITHIN ANY STREET(S).
2. ALL STOCKPILES OF SOIL AND/OR BUILDING MATERIALS THAT ARE INTENDED TO BE LEFT FOR A PERIOD GREATER THAN SEVEN CALENDAR DAYS ARE TO BE COVERED. ALL REMOVABLE BMP DEVICES SHALL BE IN PLACE AT THE END EACH WORKING DAY WHEN FIVE DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
3. A CONCRETE WASHOUT SHALL BE PROVIDED ON ALL PROJECTS WHICH PROPOSE THE CONSTRUCTION OF ANY CONCRETE IMPROVEMENTS WHICH ARE TO BE POURED IN PLACE ON SITE.
4. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER AFTER EACH RUN–OFF PRODUCING RAINFALL OR AFTER ANY MATERIAL BREACH IN EFFECTIVENESS.
5. ALL SLOPES THAT ARE CREATED OR DISTURBED BY CONSTRUCTION ACTIVITY MUST BE PROTECTED AGAINST EROSION AND SEDIMENT TRANSPORT AT ALL TIMES.
6. THE STORAGE OF ALL CONSTRUCTION MATERIALS AND EQUIPMENT MUST BE PROTECTED AGAINST ANY POTENTIAL RELEASE OF POLLUTANTS INTO THE ENVIRONMENT.

EROSION CONTROL NOTES:

1. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE GRADING PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES TO MEET "AS GRADED" CONDITIONS.
2. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR
3. WHEN THE INSPECTOR SO DIRECTS, A 12–INCH BERM SHALL BE MAINTAINED ALONG THE TOP OF THE SLOPE OF THOSE FILLS ON WHICH GRADING IS NOT IN PROGRESS.
4. STORM AND SEWER DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHALL BE PLUGGED WITH SANDBAGS.
5. EXCEPT WHEN THE INSPECTOR DIRECTS OTHERWISE, ALL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS FORECAST, AND SHALL BE MAINTAINED DURING THE RAINY SEASON (OCTOBER 15 TO APRIL 15).
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   NAME: ______________________ (TO BE FILLED IN BY CONTRACTOR)
   PHONE NUMBER: __________________

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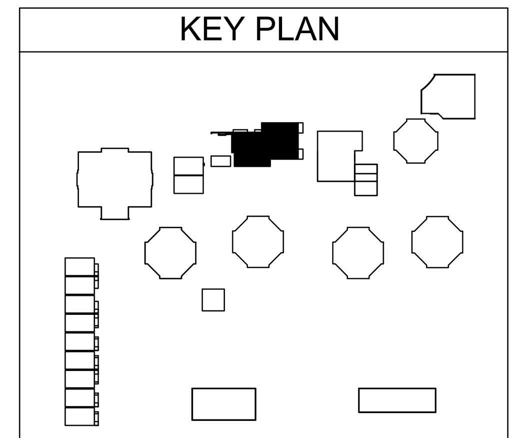
KEY PLAN



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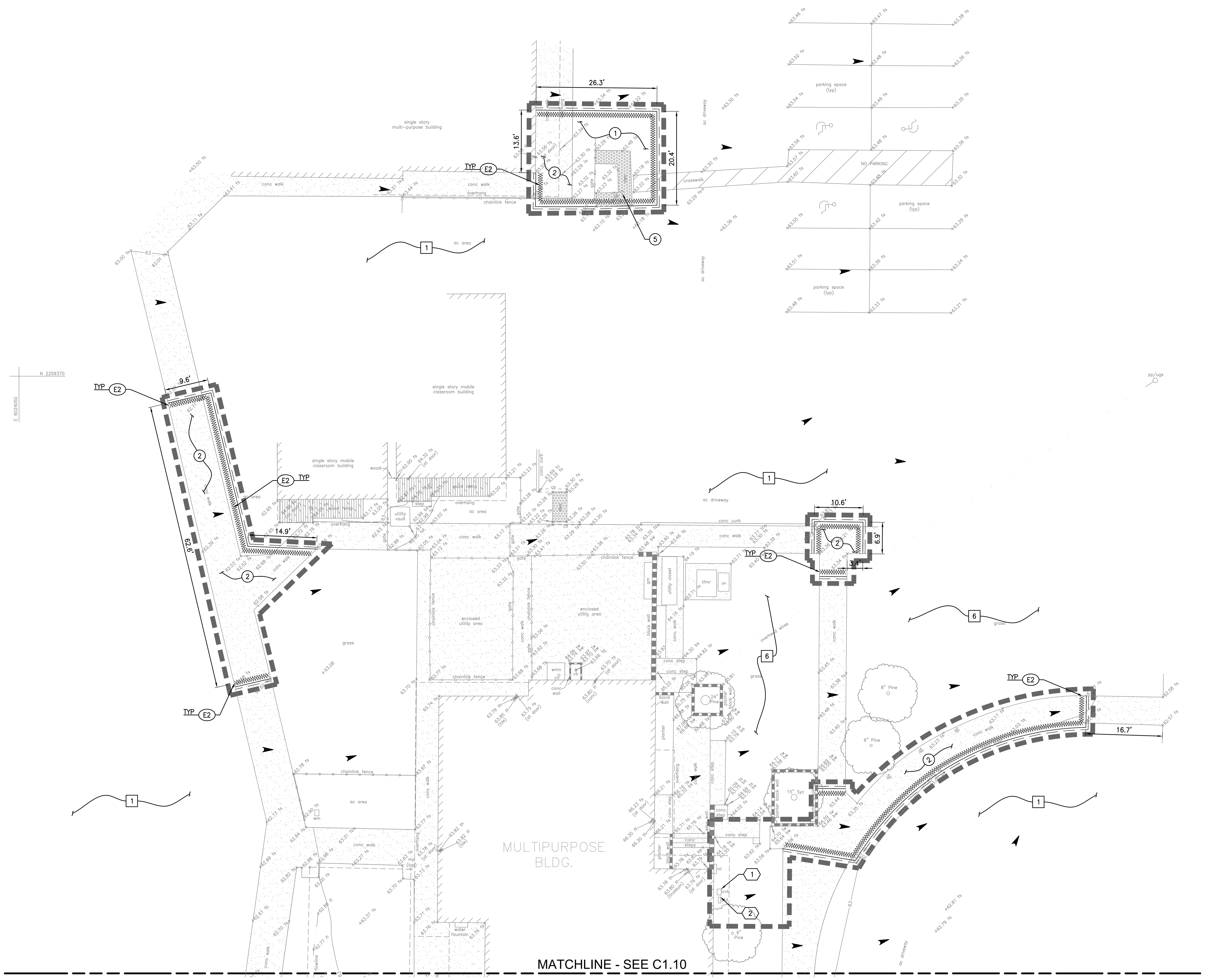
EROSION CONTROL & DEMOLITION PLAN

Date	Project Number
10/19/2021	2100005
Scale	Drawing Number
AS NOTED	C1.10
Drawn: TN / Checked: JP	



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NAME: ________________________ (TO BE FILLED IN BY CONTRACTOR)
PHONE NUMBER: ____________________

LEGEND:

- PROPERTY LINE
- LIMIT LINE OF EROSION CONTROL
- GRAVEL BAGS
- FIBER ROLL
- SURFACE FLOW DIRECTION
- SAWCUT LINE

GENERAL DEMOLITION NOTES:

1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN TO BE PROTECTED, RELOCATED AND/OR SALVAGED.
2. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS.
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4. NOT ALL EXISTING SITE CONDITIONS AND IMPROVEMENTS MAY HAVE BEEN SHOWN ON DEMOLITION PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTENT OF DEMOLITION WORK REQUIRED FOR THE IMPROVEMENTS SHOWN ON THE CONTRACT PLANS.
5. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
7. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
8. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
9. DEMOLITION IS LIMITED TO WITHIN DEMOLITION LIMIT LINE UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK DEMOLITION OF ALL EXISTING IMPROVEMENTS REQUIRED FOR THE CONSTRUCTION OF THE NEW IMPROVEMENTS SHOWN ON THE CONTRACT PLANS, REGARDLESS OF IF THE DEMOLITION AND REMOVAL OF THE EXISTING IMPROVEMENTS REQUIRED FOR NEW CONSTRUCTION IS EXPLICITLY SHOWN ON THESE PLANS TO BE DEMOLISHED AND REMOVED.
11. DEMOLITION CALLOUTS IN THIS SECTION ARE REPRESENTATIVE OF WHAT IS TO BE DONE, NOT AN ITEMIZED ACCOUNTING FOR EACH PIPE, CATCH BASIN, MANHOLE, VAULT, ETC, THAT IS TO BE DEMOLISHED, REMOVED AND DISPOSED OF.
12. CONTRACTOR SHALL FIELD VERIFY AND FULLY UNDERSTAND THE OPERATION OF THE EXISTING IRRIGATION SYSTEM. CONTRACTOR SHALL RELOCATE THE EXISTING IRRIGATION CONTROL VALVE FOR CONSTRUCTION OF PROPOSED IMPROVEMENTS SHOWN ON THE CONTRACT DOCUMENTS TO THE SATISFACTION OF THE OWNER. THE CONTRACTOR SHALL MAKE ALL NECESSARY INSTALLATION NEEDED CAUSED BY RELOCATION OF EXISTING CONTROL VALVE, FOR PROPER OPERATION OF EXISTING IRRIGATION SYSTEM.

DEMOLITION NOTES:

PROTECT-IN-PLACE

1 ASPHALT PAVEMENT
2 CONCRETE PAVEMENT
3 CONCRETE CURB
4 CONCRETE RAMP
5 TRUNCATED DOMES
6 LANDSCAPING

REMOVE & DEMOLISH

(1) ASPHALT PAVEMENT
(2) CONCRETE PAVEMENT
(3) CONCRETE CURB
(4) CONCRETE RAMP
(5) TRUNCATED DOMES

REMOVE AND RELOCATE

1 IRRIGATION CONTROL VALVE
2 IRRIGATION BACKFLOW PREVENTER

EROSION CONTROL NOTES:

* FINAL BMP LOCATION TO BE DETERMINED BY THE CONTRACTOR.

(E1) PLACE GRAVEL BAGS TRIPLE ROW PER CASQA BMP FACT SHEET SE6.

(E2) PLACE FIBER ROLL PER CASQA BMP FACT SHEET SE5.

BMP NOTES:

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA 2009, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTORS):

EROSION CONTROL

EC1-SCHEDULING
EC2-PRESERVATION OF EXISTING VEGETATION
EC3-HYDRAULIC MULCH
~~EC4-HYDROSEEDING~~
~~EC5-SOIL BINDERS~~
~~EC6-STRAW MULCH~~
EC7-GEOTEXTILES
~~EC8-WOOD MULCHING~~
~~EC9-EARTH DIKES AND DRAINAGE SWALES~~
~~EC10-VELOCITY DISSIPATION DEVICES~~
~~EC11-SLOPE DRAINS~~
~~EC12-STREAMBANK STABILIZATION~~
~~EC13-POLYCRYLAMIDE~~

TEMPORARY SEDIMENT CONTROL

~~SE1-SILT FENCE~~
~~SE2-SEDIMENT BASIN~~
~~SE3-SEDIMENT TRAP~~
~~SE4-CHECK DAM~~
SE5-FIBER ROLLS
SE6-GRAVEL BAG BERM
~~SE7-STREET SWEEPING AND VACUUMING~~
~~SE8-SANDBAG BARRIER~~
~~SE9-STRAW BALE BARRIER~~
~~SE10-STORM DRAIN INLET PROTECTION~~
~~SE11-CHEMICAL TREATMENT~~

EQUIPMENT TRACKING CONTROL

TC1-STABILIZED CONSTRUCTION ENTRANCE/EXIT
~~TC2-STABILIZED CONSTRUCTION ROADWAY~~
~~TC3-ENTRANCE/OUTLET TIRE WASH~~

WIND EROSION CONTROL

WE1-WIND EROSION CONTROL

NON-STORMWATER MANAGEMENT

NS1-WATER CONSERVATION PRACTICES
~~NS2-DEWATERING OPERATIONS~~
~~NS3-PAVING AND GRINDING OPERATIONS~~
~~NS4-TEMPORARY STREAM CROSSING~~
~~NS5-CLEAR WATER DIVERSION~~
~~NS6-ILLICIT CONNECTION/DISCHARGE~~
~~NS7-POTABLE WATER/IRRIGATION~~
~~NS8-VEHICLE AND EQUIPMENT CLEANING~~
~~NS9-VEHICLE AND EQUIPMENT FUELING~~
~~NS10-VEHICLE AND EQUIPMENT MAINTENANCE~~
~~NS11-PILE DRIVING OPERATIONS~~
NS12-CONCRETE CURING
NS13-CONCRETE FINISHING
~~NS14-MATERIAL OVER WATER~~
~~NS15-DEMOLITION ADJACENT TO WATER~~
~~NS16-TEMPORARY BATCH PLANTS~~

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL

WM1-MATERIAL DELIVERY AND STORAGE
WM2-MATERIAL USE
~~WM3-STOCKPILE MANAGEMENT~~
WM4-SPILL PREVENTION AND CONTROL
WM5-SOLID WASTE MANAGEMENT
WM6-HAZARDOUS WASTE MANAGEMENT
~~WM7-CONTAMINATED SOIL MANAGEMENT~~
WM8-CONCRETE WASTE MANAGEMENT
WM9-SANITARY/SEPTIC WASTE MANAGEMENT
WM10-LIQUID WASTE MANAGEMENT

N

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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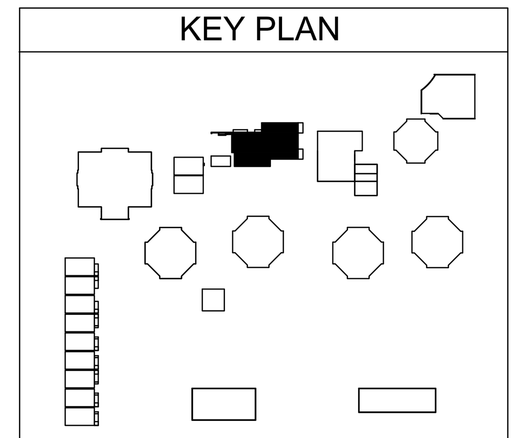
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



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EROSION CONTROL & DEMOLITION PLAN

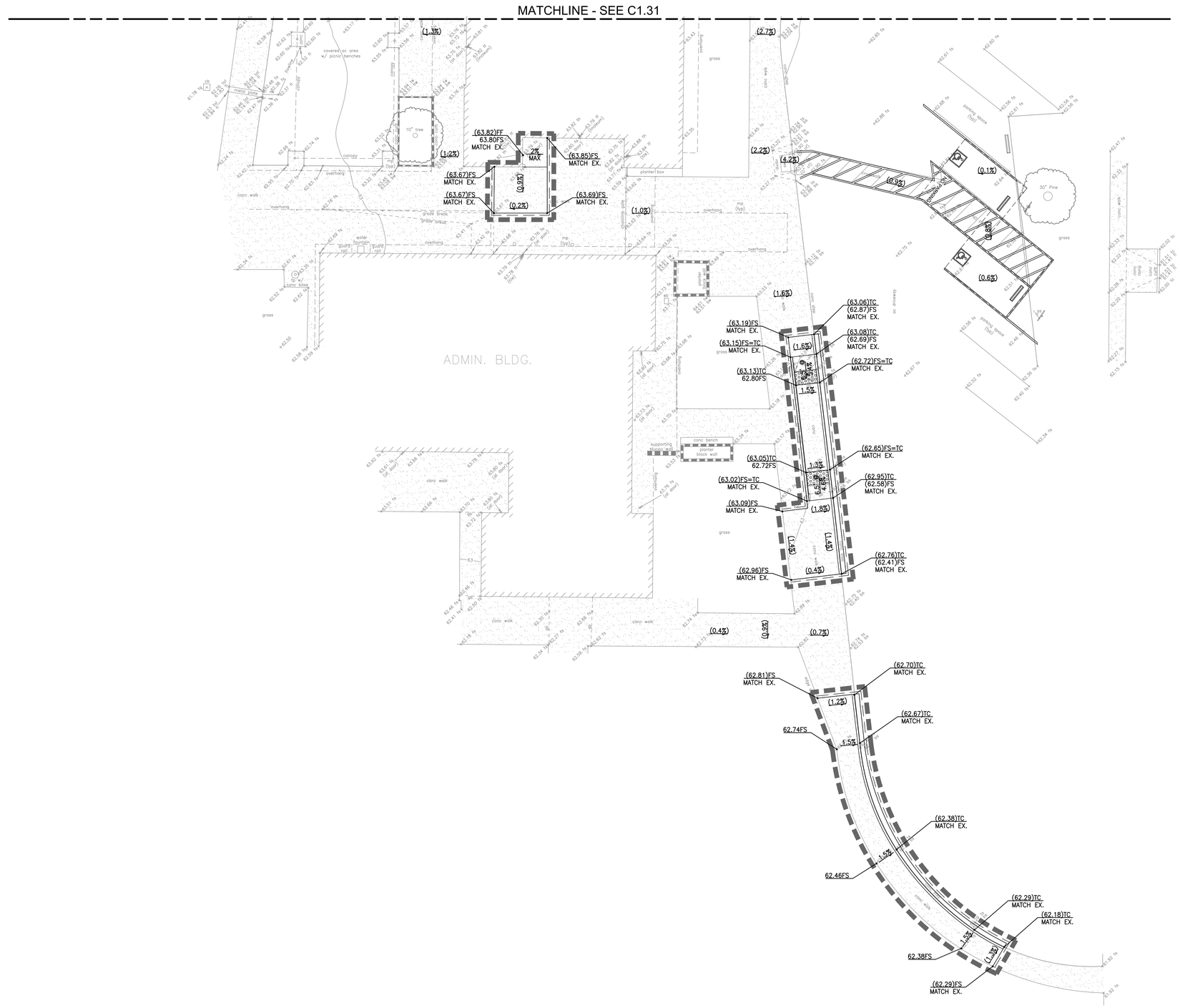
Date	Project Number
10/19/2021	2100005
Scale: AS NOTED	Drawing Number
Drawn: TN / Checked: JP	C1.11

Drawing: P:\2021\2100005 -19- BPSD Corey ES MP Mod\DWG\SHEET\2100005C-C1.10ECDX.dwg Last Plotted: Friday, October 15, 2021 5:36:01 PM By: April Santoni

LEGEND:

PROPERTY LINE

LIMIT LINE OF PAVING



PLAN

SCALE: 1" = 10'-0"

0 5' 10' 20'

GRAPHIC SCALE

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● DSA BACK CHECK	10/19/2021
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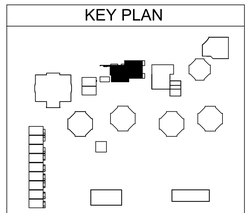
○ CONSTRUCTION	

KEY PLAN



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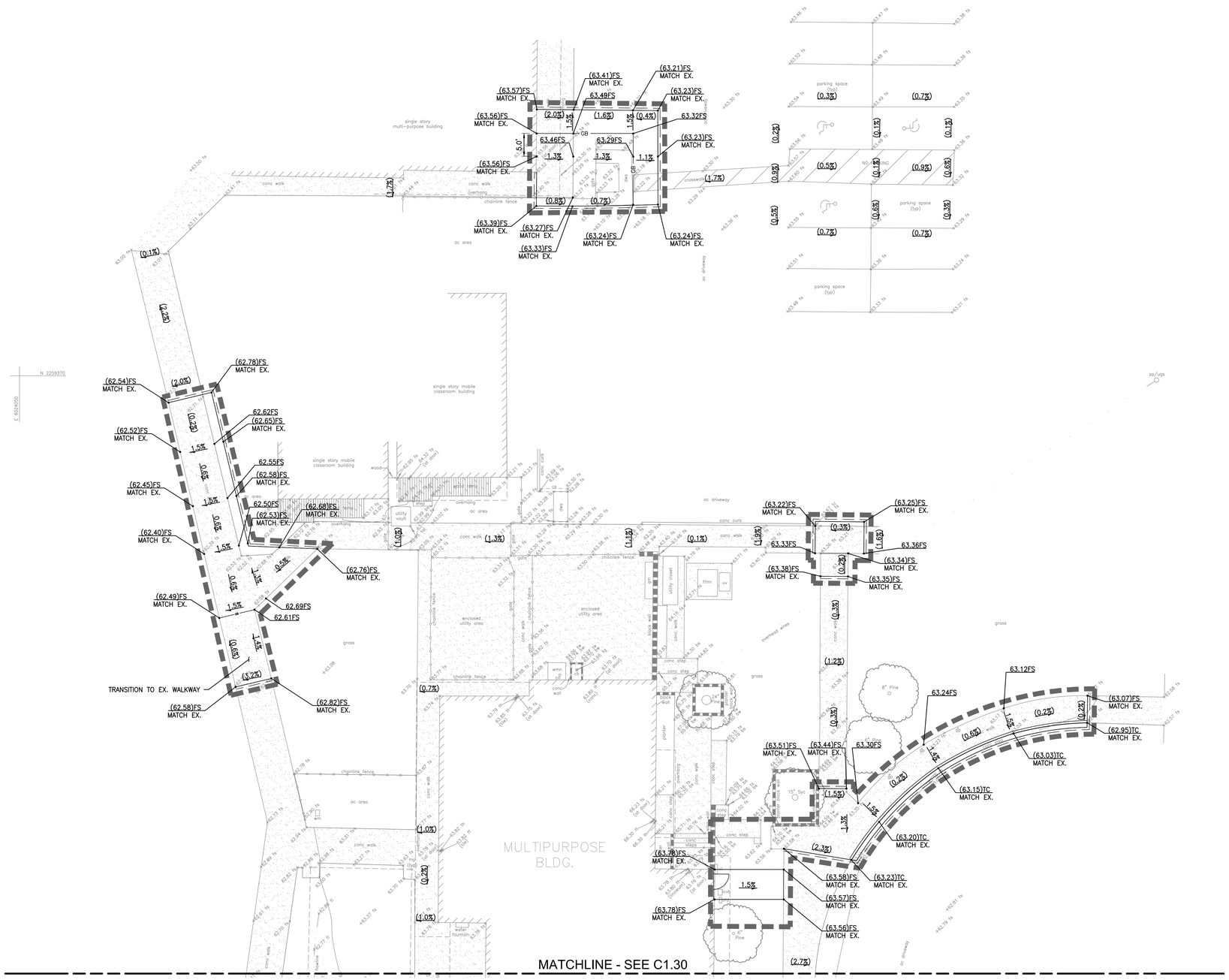
GRADING PLAN

Date	Project Number
10/19/2021	2100005
Scale	Drawing Number
AS NOTED	C1.30
Drawn: TN	Checked: JP



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SCALE: 1" = 10'-0"
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GRAPHIC SCALE

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○ CONSTRUCTION	

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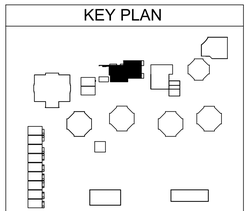

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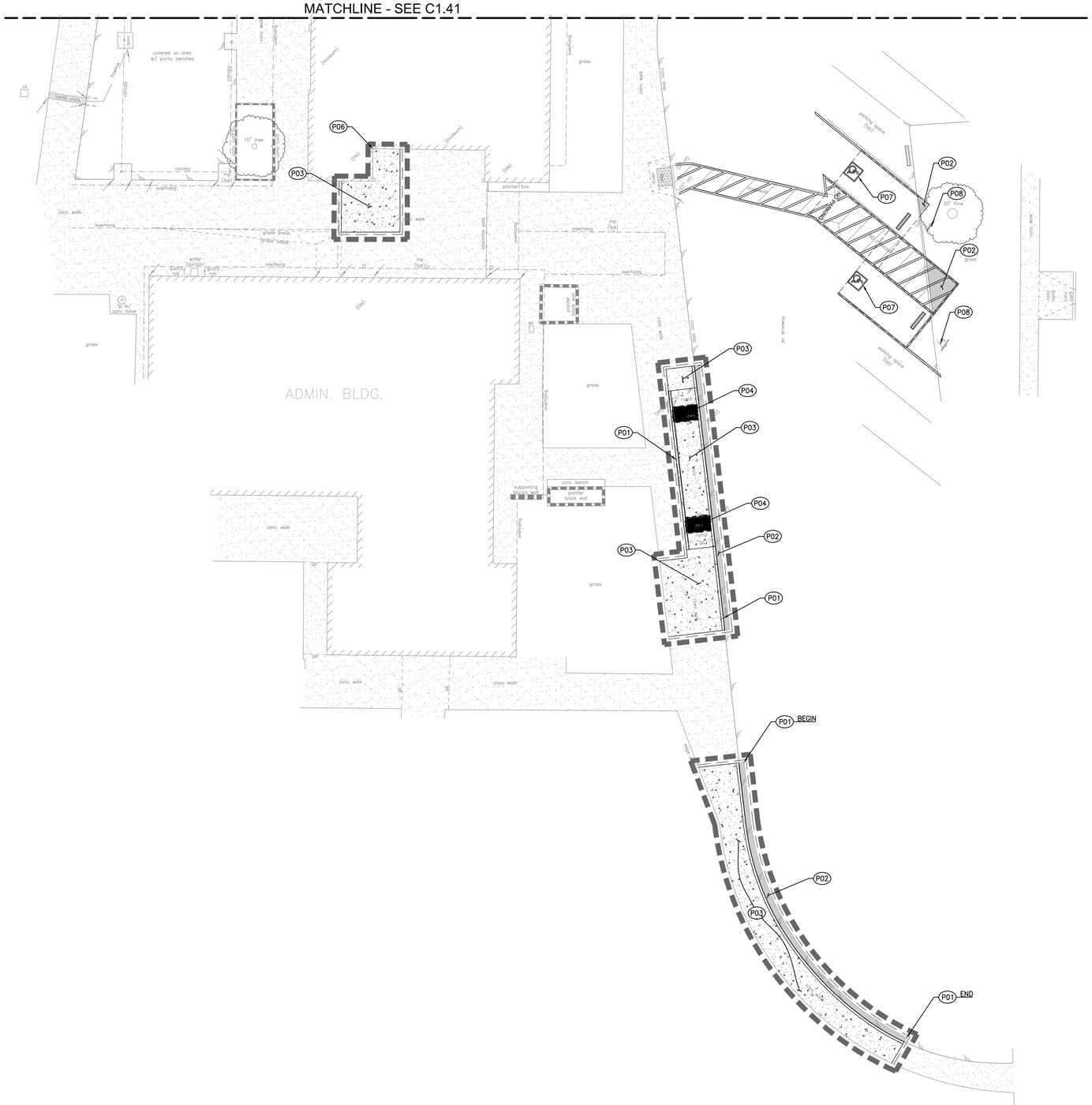
GRADING PLAN

Date 10/19/2021	Project Number 2100005
Scale AS NOTED	Drawing Number C1.31
Drawn TN / Checked JP	

Drawing: P:\2021\2100005 - BPSD Corey ES MP Mod\DWG\SHEETS\2100005C-C1.30SDC.dwg Last Plotted: Friday, October 15, 2021 5:36:16 PM By: April Sanford

MATCHLINE - SEE C1.41



LEGEND:

- PROPERTY LINE
- LIMIT LINE OF PAVING
- CONCRETE PAVING (REFER TO SHEET C5.00 FOR DETAILS)
- ASPHALT COLD MILL & OVERLAY
- PA — PLANTER AREA/LANDSCAPE (REFER TO LANDSCAPING PLANS FOR DETAILS)

PAVING CONSTRUCTION NOTES:

- P01 CONCRETE CURB PER DETAIL 1/C5.00.
- P02 ASPHALT CONCRETE COLD MILL & OVERLAY.
- P03 CONCRETE PAVEMENT PER DETAIL 3/C5.00.
- P04 CURB RAMP PER ARCHITECTURAL PLANS.
- P05 TRUNCATED DOMES PER ARCHITECTURAL PLANS.
- P06 ISOLATION JOINT PER DETAIL 4/C5.00.
- P07 ACCESSIBLE PARKING STALL PER ARCHITECTURAL PLANS.
- P08 ACCESSIBLE PARKING SIGNAGE PER ARCHITECTURAL PLANS.

NOTE:

PERIMETER FENCING IMPROVEMENTS PER ARCHITECTURAL PLANS.

SEE ARCHITECTURAL SHEET A0.3 FOR ACCESSIBLE PATH(S) OF TRAVEL STRIPING FOR AREA OF WORK SHOWN HEREON.

N

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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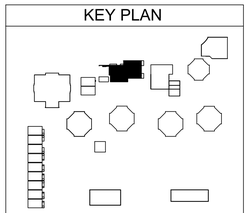
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



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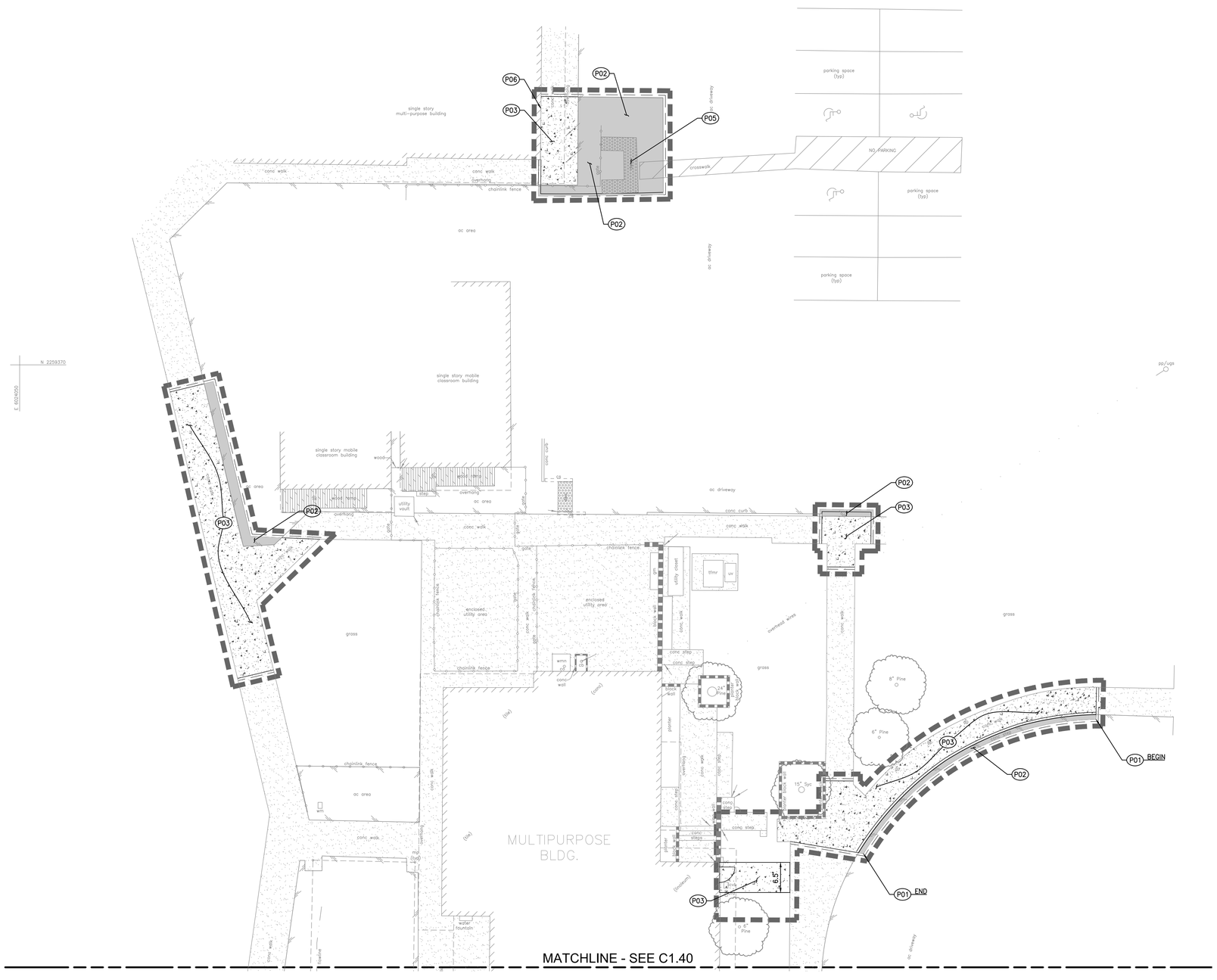
PAVING PLAN

Date	Project Number
10/19/2021	2100005
Scale: AS NOTED	Drawing Number: C1.40
Drawn: TN	Checked: JP

Drawing: P:\2021\2100005 -19- BPSD Corey ES MP Mod\DWG\SHEETS\2100005-C1.40PV.dwg Last Plotted: Friday, October 15, 2021 5:18:23 PM By: April Sanford



LEGEND:

- PROPERTY LINE
- LIMIT LINE OF PAVING
- CONCRETE PAVING (REFER TO SHEET C5.00 FOR DETAILS)
- ASPHALT COLD MILL & OVERLAY
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- P02 ASPHALT CONCRETE COLD MILL & OVERLAY.
- P03 CONCRETE PAVEMENT PER DETAIL 3/C5.00.
- P04 CURB RAMP PER ARCHITECTURAL PLANS.
- P05 TRUNCATED DOMES ARCHITECTURAL PLANS.
- P06 ISOLATION JOINT PER DETAIL 4/C5.00.
- P07 ACCESSIBLE PARKING STALL PER ARCHITECTURAL PLANS.
- P08 ACCESSIBLE PARKING SIGNAGE PER ARCHITECTURAL PLANS.

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PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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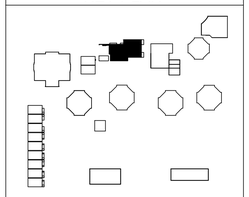

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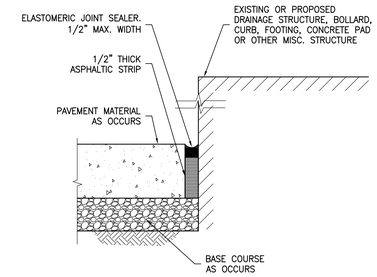
PAVING PLAN

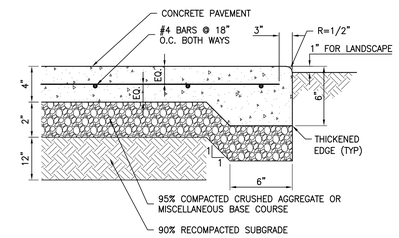
Date 10/19/2021	Project Number 2100005
Scale AS NOTED	Drawing Number C1.41
Drawn TN	Checked JP

Drawing: P:\2021\2100005 -19- BPSD Corey ES MP Mod\DWG\SHEETS\2100005-C1.40PV.dwg Last Plotted: Friday, October 15, 2021 5:18:24 PM By: April Santosh



4 ISOLATION JOINT AT STRUCTURE

N.T.S.

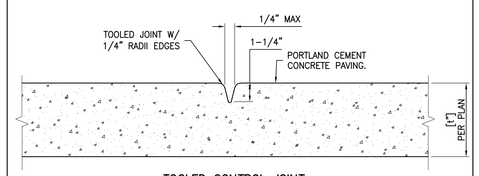


NOTES:

1. ALL TREAD SURFACES SHALL BE SLIP-RESISTANT.
2. REFER TO CIVIL SPECIFICATIONS FOR COLOR, PATTERN, TEXTURE, AND FINISH.
3. CONTRACTOR TO MATCH EXISTING SCORE PATTERN WHERE PROPOSED CONSTRUCTION JOINTS ARE NOT SHOWN PER PLAN. SEE DETAIL 2 HEREON.
4. CONCRETE MIX PER 560-C-3250 PER SSPWC.

3 CONCRETE WALK SECTION

N.T.S.



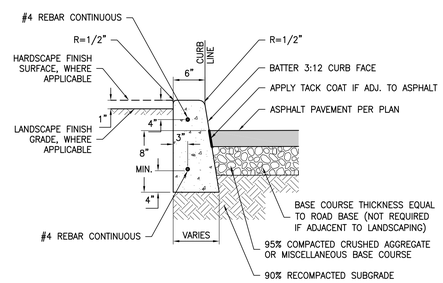
TOOLED CONTROL JOINT

NOTES:

1. CONTROL JOINTS SHALL BE CONSTRUCTED PER S.S.P.W.C.
2. CONSTRUCT CONTROL JOINTS WITHIN 24 HOURS OF POUR.
3. SEE PLAN FOR LOCATION OF CONTROL JOINTS.

2 TOOLED CONTROL JOINT

N.T.S.



NOTES:

1. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.
2. CONTROL JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 10' INTERVALS O.C.
3. WHERE A WALK IS ADJACENT TO THE CURB, THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

1 CONCRETE CURB

N.T.S.

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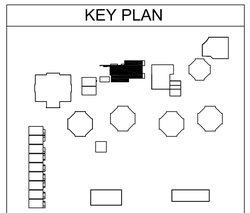
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
◯ DSA PLAN CHECK	
◯ DSA BACK CHECK	
◯ BIDDING	
◯ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

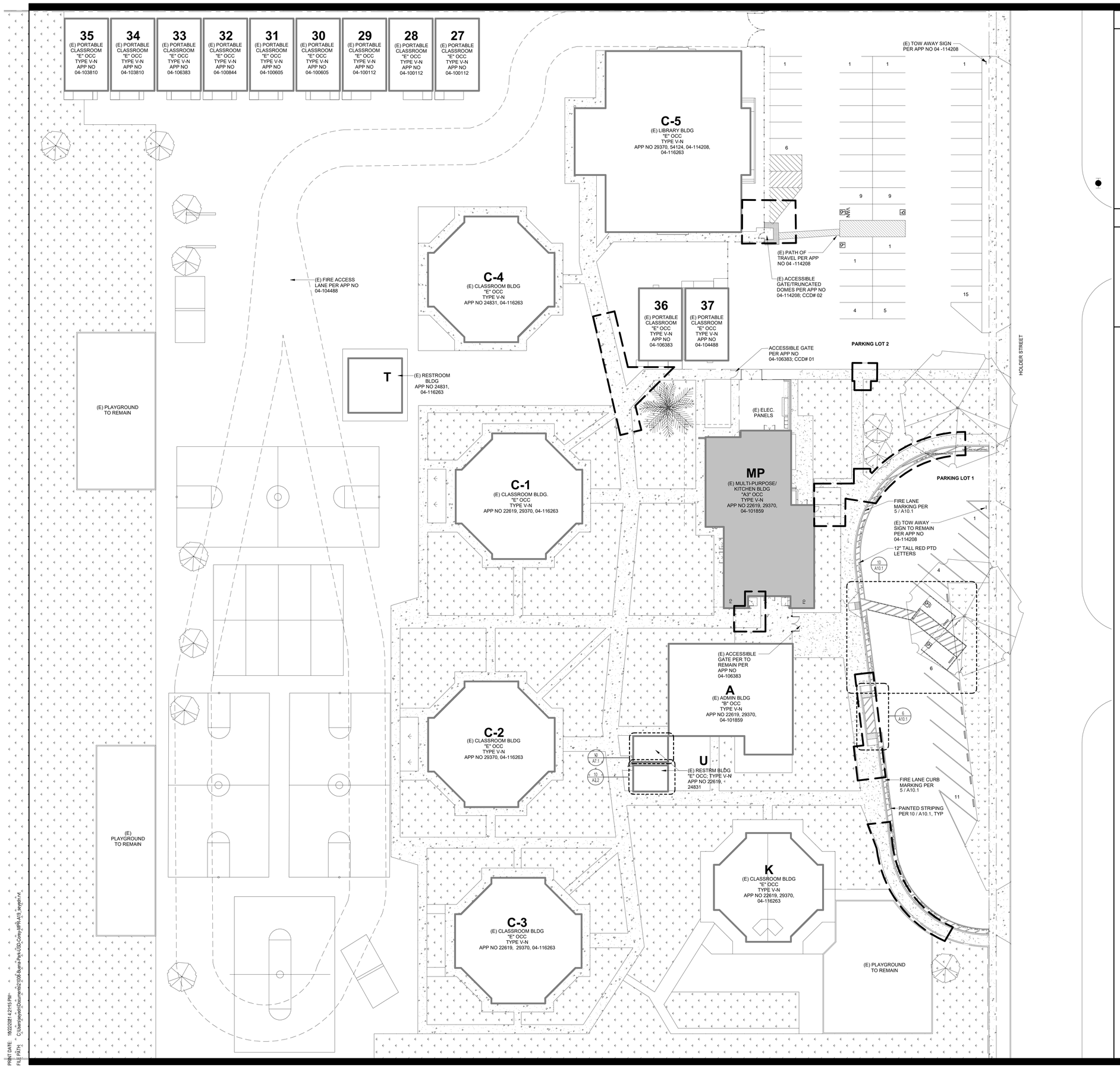
DSA BACKCHECK

COREY ES MP BUILDING MODERNIZATION
7351 HOLDER ST.
BUENA PARK, CA 90620

DETAILS

Date 10/19/2021	Project Number 2100005
Scale AS NOTED	Drawing Number C5.00
Drawn TN / Checked JP	

Drawing: P:\2021\2100005 --19- BPS2 Corey ES MP Mod\DWG\SHEETS\2100005C-C5.00ST.dwg Last Plotted: Monday, October 25, 2021 10:39:00 AM By: April Sandoval



GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR 6'-0" HIGH TEMPORARY CONSTRUCTION BARRIER WITH VISION SCREEN AT STAGING, STORAGE AND CONSTRUCTION AREA WITH SIGNAGE EVERY 20'-0" TO WARN STUDENTS OF CONSTRUCTION AREA.
2. CONTRACTOR TO BRING IN OFFICE TRAILER TO CONSTRUCTION AREA.
3. CONTRACTOR SHALL ACCESS THE SITE FROM HOLDER STREET. ANY DAMAGE TO FIRE LANE WILL BE AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR TO REPAIR BACK TO EXISTING CONDITIONS ALL LAYDOWN AREAS AT THE END OF CONSTRUCTION. THIS INCLUDES LANDSCAPE AREAS AND ANY BROKEN SPRINKLERS, VALVE BOXES, CONCRETE, ASPHALT, ETC.
5. CONTRACTOR SHALL REPLACE, RECONSTRUCT AND REPAIR ALL EXISTING WORK THAT IS IMPACTED, DAMAGED, OR DESTROYED AS A RESULT OF ANY CONTRACTOR WORK INCLUDING, BUT NOT LIMITED TO, HARDSCAPING, SIDEWALKS, IRRIGATION SYSTEMS, LANDSCAPING, LAWNS, STRUCTURES AND UTILITIES - ALL TO THE SATISFACTION OF THE DISTRICT.
6. WHERE ASPHALT OR CONCRETE IS BEING REPATCHED, CONTRACTOR SHALL PROVIDE EVEN AND STRAIGHT LINE CUTS WITH 2-FOOT STRAIGHT SLURRY SEAL SURFACE PATCH ON BOTH SIDES OF CUT.
7. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON SITE TO AVOID EXISTING DUCTS, PIPING OR CONDUITS, ETC., AND TO PREVENT HAZARDS TO PERSONNEL AND/OR DAMAGE TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN AND INSTALLED BY ANY OTHER CONTRACTS. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY ELEMENTS FOR CONSTRUCTION SAFETY.
8. GATES IN PATH OF TRAVEL SHALL COMPLY WITH EXIT DOOR REQUIREMENTS WITH PROPER LEVER HARDWARE AND KICK PLATES.

LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- (E) FIRE HYDRANT
- (E) FIRE ACCESS LANE PER APP NO 04-1
- (E) BUILDING, NOT UNDER SCOPE OF WORK
- BUILDING UNDER SCOPE OF WORK

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
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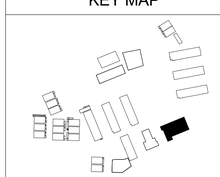
○ CONSTRUCTION	

KEY MAP



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DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER ST.
BUENA PARK, CA 90620

OVERALL SITE PLAN

Date 10/19/2021	Project Number 21008
Scale 1"=20'-0"	Drawing Number A1.1
Drawn / Author	Checked / Checker

PRINT DATE: 10/22/2021 4:21:15 PM*
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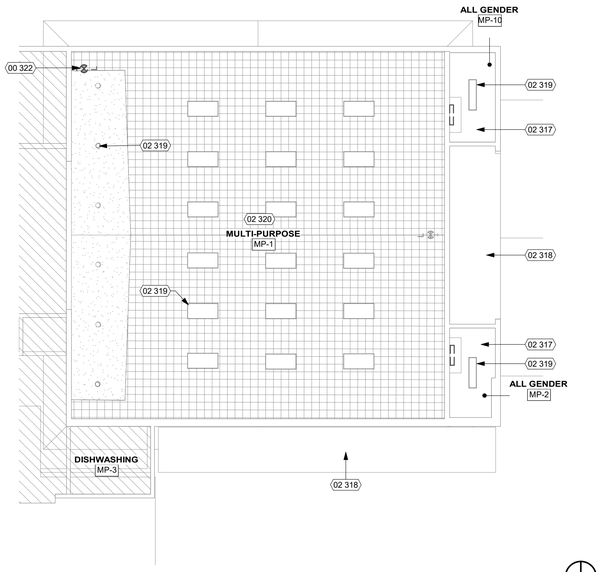
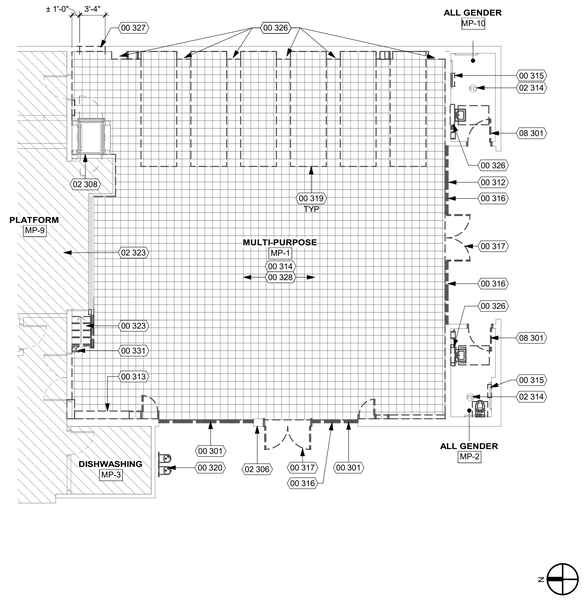
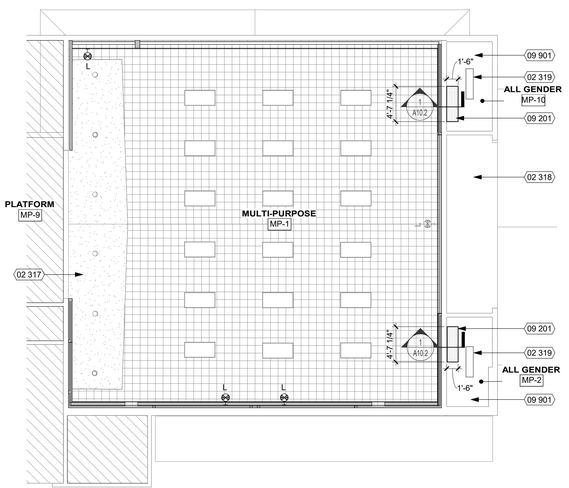


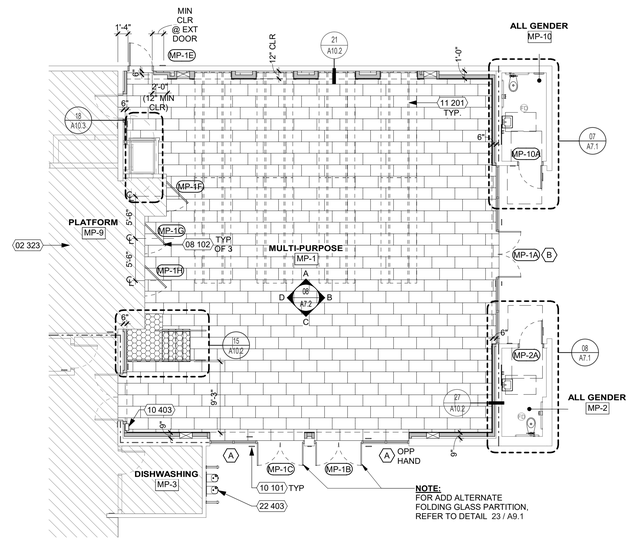
DEMOLITON REFLECTED CEILING PLAN 1/8" = 1'-0" 18



DEMOLITION FLOOR PLAN 1/8" = 1'-0" 8



ALTERATION REFLECTED CEILING PLAN 1/8" = 1'-0" 20



ALTERATION FLOOR PLAN 1/8" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
00 301	ADD ALTERNATE: REMOVE PORTION (E) FLOOR SLAB AS INDICATED
00 312	REMOVE (E) PLYWOOD FURRING
00 313	REMOVE (E) DRAPERY POCKET/DRAPERY
00 314	REMOVE (E) FLOORING, PATCH/REPAIR CONC SLAB AS REQ'D TO RECEIVE FINISH
00 315	REMOVE (E) TOILET PAPER DISPENSER, RETURN TO DISTRICT FOR REUSE
00 316	REMOVE (E) STOREFRONT
00 317	REMOVE (E) DOOR
00 319	REMOVE IN-WALL CAFETERIA TABLE/POCKET/POCKET FRAMING
00 320	REMOVE (E) DRINKING FOUNTAIN
00 322	REMOVE (E) ILLUMINATED EXIT SIGN AND CONDUIT BACK TO THE NEAREST JUNCTION BOX
00 323	REMOVE (E) WOOD STAIR/LOW WALL/HANDRAIL
00 326	REMOVE (E) FURRING, PATCH/REPAIR WALL BEHIND AS REQ'D
00 327	REMOVE PORTION (E) WALL FOR NEW DOOR
00 328	REMOVE ALL (E) SURFACE MOUNTED CONDUIT, RACEWAYS AND JUNCTION BOXES; REMOVE SECTIONS OF DRYWALL AT DIRECTION OF CONTRACTOR TO PLACE (N)/(E) ELECTRICAL WORK IN WALLS AND REPLACE ALL GYP BD REMOVED.
00 331	REMOVE (E) BRACKET-MOUNTED FIRE EXTINGUISHER, SAVE FOR REUSE
02 306	(E) CMU WALL TO REMAIN, PROTECT IN PLACE
02 308	(E) WHEELCHAIR LIFT TO REMAIN, PROTECT IN PLACE
02 314	(E) FLOOR DRAIN TO REMAIN
02 317	(E) GYP. BD SOFFIT TO REMAIN, PATCH/REPAIR AS REQ'D; PAINT P-1
02 318	(E) PLASTER SOFFIT TO REMAIN, PROTECT IN PLACE; PAINT P-1
02 319	(E) LIGHT FIXTURE TO REMAIN, CLEAN FIXTURE HOUSING/LENS, RELAMP TO MATCH EXISTING
02 320	(E) CEILING TO REMAIN, PROTECT IN PLACE; PAINT P-1
02 323	(E) PLATFORM FLOORING TO REMAIN, PROTECT IN PLACE
08 102	UNDER-PLATFORM CHAIR STORAGE DOOR/FRAME PER DOOR SCHEDULE ON SHEET A9.1
08 301	FLIP SWING ON (E) DOOR, MODIFY DOOR HARDWARE AS REQ'D.
09 201	PATCH/REPAIR GYP BD CEILING, PAINT P-1 PER FINISH LIST
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.5
10 403	FIRE EXTINGUISHER (2A-10B:C) IN SEMI-RECESSED CABINET PER 10/A10.2
11 201	DOUBLE-STACKED IN-WALL CAFETERIA TABLE/POCKET IN WOOD POCKET FRAMING PER
22 403	HI-LO DRINKING FOUNTAIN (SEE DETAIL 23/A10.10.2)

DEMOLITION FLOOR PLAN LEGEND

BUILDING ELEMENT TO BE DEMOLISHED, REMOVED, AND/OR RELOCATED

NOTE: NO DEMOLITION SHALL BEGIN UNTIL PLANS HAVE BEEN APPROVED BY DSA

(E) TO REMAIN

RCP GENERAL NOTES

1. PAINT GYP. BD. CEILINGS AND SOFFITS P-1 UNO
2. PAINT EXPOSED CEILINGS, DUCTWORK AND EQUIPMENT PER FINISH LIST

FINISH LIST

LUXURY VINYL TILE			
LVT-1	MOHAWK GROUP	LIVING LOCAL 12" X 24" "WEATHERING" - 960	
LVT-2	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "SPORTY BLUE" - 620	
LVT-3	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "MASCAL" - 585	
WALL BASE			
B-1	JOHNSONITE	4" COVED, COLOR: 23 "VAPOR GREY" CG	
VINYL WALLCOVERING TACKBOARD			
W/ VINYL FABRIC-WRAPPED EDGES @ INTERIOR SEAMS AND VINYL PERIMETER TRIM			
VWC-1	ALL	KOROSEAL	SPELLBOUND "DELTA" 8821-71
PAINT			
P-1	TYP WALLS, CEILINGS, SOFFITS, INT. DOORS/DOOR FRAMES	VISTA PAINT	"COOL ELEGANCE" 0517 (SEMI GLOSS DOORS/FRAMES & EGGSHELL FIELD)
P-2	ACCENT COLOR AS INDICATED	VISTA PAINT	"CARIBBEAN CURRENT" 0598 (SEMI GLOSS DOORS/ FRAMES & EGGSHELL FIELD)
P-3	TABLE POCKETS	RAL	K1 CLASSIC "DISTANT BLUE" 5023
PLASTIC LAMINATE			
PLAM-1	FOLDING LUNCH TABLES/BENCHES	WILSONART	"WHITE TIGRIS" 4783-60
RUBBER FLOORING			
RB-1	STAIR TREADS AND RISERS	MOHAWK GROUP	ELEMENTAL EDGES "AIRCRAFT CARRIER" 073
SOLID VINYL LANDING TILE			
V-1	LANDING TILE	MOHAWK GROUP	ELEMENTAL EDGES "AIRCRAFT CARRIER" 073
PERFORATED METAL PANEL			
PMP-1	RETURN AIR GRILLES	DIAMOND PERFORATED METALS	3/16" DIA 3/8" STAGGERED CENTERS, POWDER COAT TO MATCH P-2
FRP			
FRP-1	HALLWAY WALLS, TYP	MARLITE	SMOOTH S 100 S/2/S WHITE W/ WHITE PVC TRIM

RCP LEGEND

(E) 12" x 12" ACOUSTIC CEILING TILES TO REMAIN, PAINT P-1

12" x 12" ACOUSTIC CEILING TILES, PAINT P-1

PATCH/REPAIR (E) GYP BD CEILING AS REQ'D, PAINT P-1

PATCH/REPAIR (E) EXT CEMENT PLASTER CEILINGS AS REQ'D, PAINT P-1

(E) LIGHT FIXTURES TO REMAIN, CLEAN LENS/RELAMP

(E) MECHANICAL GRILLES TO REMAIN, CLEAN AND PAINT P-1

(E) CEILING ACCESS PANEL TO REMAIN, PAINT P-1

(E) ILLUMINATED EXIT SIGN TO REMAIN

SELF-ILLUMINATED EXIT SIGN

GENERAL NOTES

1. FOR ALL REQUIRED SIGNAGE INCLUDING ROOM NAME/NUMBER, SEE SHEET A0.5
2. FOR TYPICAL DOOR CLEARANCES, SEE 1 / A10.1
3. DIMENSIONS OF WALLS ARE FROM FACE OF STUD UNLESS OTHERWISE NOTED.
4. PAINT ALL INTERIOR WALLS P-1 UNO, SEE FINISH LIST FOR MORE INFO.
5. SEE STRUCTURAL DRAWINGS FOR MORE INFO.

FLOOR PLAN LEGEND

A101A — DOOR NUMBER PER SCHEDULE

A — STOREFRONT PER WINDOW TYPES, SEE SHEET A9.1

LINE OF CEILING, SOFFIT OR ROOF ABOVE

(E) 1 HOUR OCCUPANCY SEPARATION

5/8" TYPE 'X' GYP BD ON 2 X WOOD STUDS; RELOCATE (E) DEVICES TO NEW FINISH SURFACE; FURRING DIMENSIONS SHOWN ARE TO OUTSIDE FACE OF GYP BD. (SEE INTERIOR ELEVATIONS FOR EXTENT OF TACK BOARD)

(E) WALL TO REMAIN, PROTECT IN PLACE

NOT IN CONTRACT

LVT PER FINISH LIST THIS SHEET

LVT PER FINISH LIST THIS SHEET

ACCESSIBLE DOOR CLEARANCES PER 1 / A10.1

INTERIOR ELEVATION TAG

A / B / C / D — X / AX.XX

X = INTERIOR ELEVATION NUMBER
AX.X = SHEET NUMBER
A/B/C/D = INTERIOR ELEVATION VIEW DESIGNATION

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ARCHITECT | ENGINEER

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DATE SIGNED 10/15/2021

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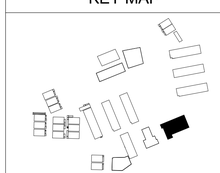
KEY MAP



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DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
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BUENA PARK, CA 90620

DEMOLITION/ ALTERATION FLOOR PLANS/RCPS

Date 10/19/2021	Project Number 21008
Scale As indicated	Drawing Number A2.1
Drawn / Checked	
Author / Checker	

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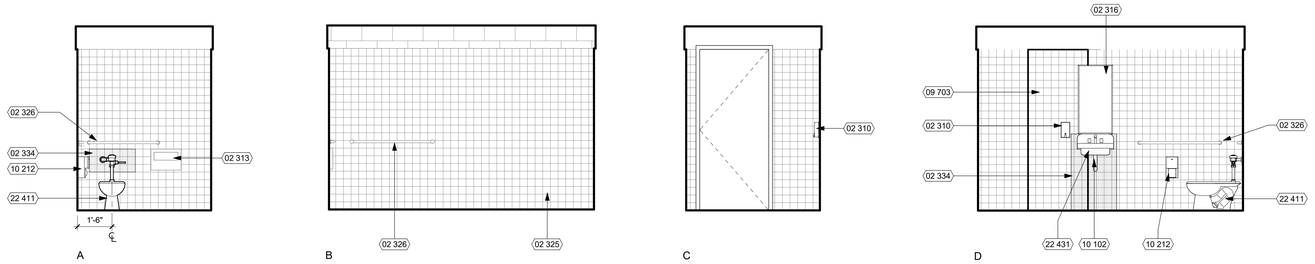
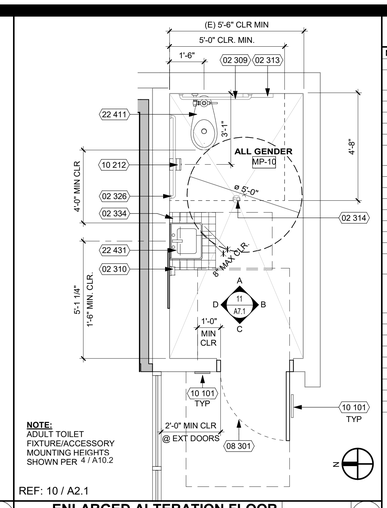


NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

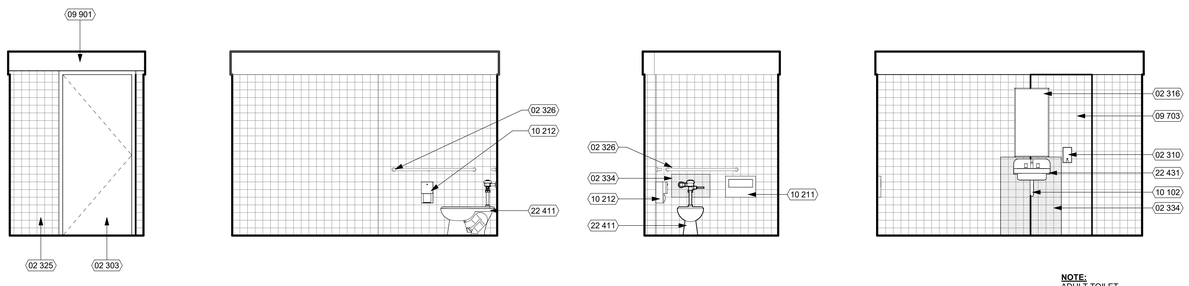
INTERIOR ELEVATIONS-ALL GENDER MP-10 3/8" = 1'-0" 11



NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

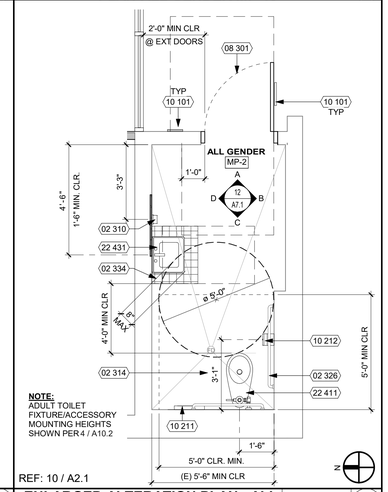
REF: 10 / A2.1

ENLARGED ALTERATION FLOOR PLAN-ALL GENDER MP-10 3/8" = 1'-0" 07



NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

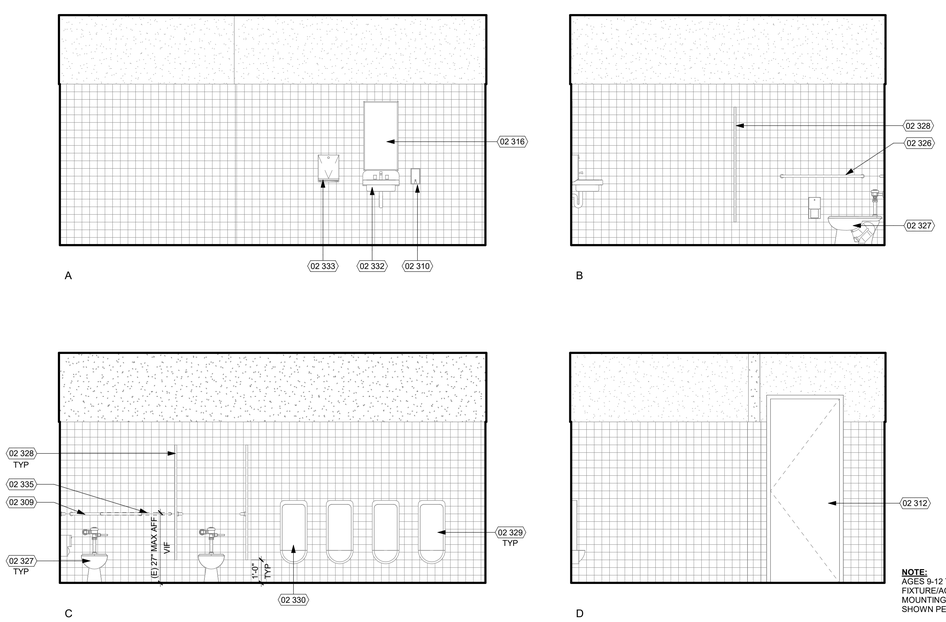
INTERIOR ELEVATIONS-ALL GENDER MP-2 3/8" = 1'-0" 12



NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

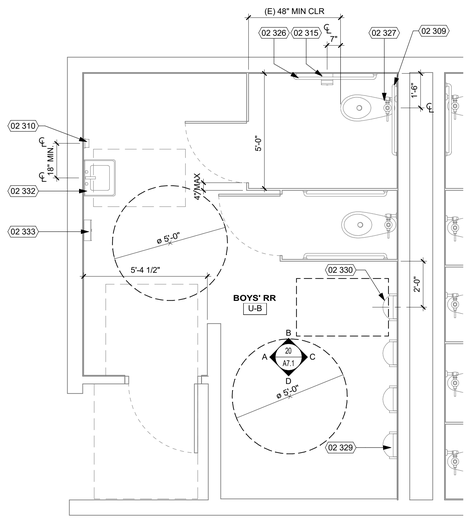
REF: 10 / A2.1

ENLARGED ALTERATION FLOOR PLAN - ALL GENDER MP-2 3/8" = 1'-0" 08



NOTE:
AGES 9-12 TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

BOYS' RESTROOM - U-B - INTERIOR ELEVATIONS 3/8" = 1'-0" 20



NOTE:
AGES 9-12 TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

REF: 10 / A0.3

BLDG. U - BOYS' RESTROOM - ENLARGED FLOOR PLAN 3/8" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
02 303	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 309	(E) 36" STAINLESS STEEL GRAB BAR WITH SNAP FLANGE BOBRICK B-5806 TO REMAIN
02 310	(E) SURFACE-MOUNTED SOAP DISPENSER BOBRICK B-2111 TO REMAIN
02 312	(E) DOOR TO REMAIN, PROTECT IN PLACE
02 313	(E) SURFACE-MOUNTED SEAT-COVER DISPENSER BOBRICK B-221 TO REMAIN
02 314	(E) FLOOR DRAIN TO REMAIN
02 315	(E) TOILET PAPER DISPENSER TO REMAIN
02 316	(E) GLASS MIRROR WITH STAINLESS STEEL ANGLE FRAME BOBRICK B-290 TO REMAIN. PROTECT IN PLACE
02 325	(E) CERAMIC TILE TO REMAIN. PATCH/REPAIR TO MATCH (E) AS REQ'D
02 326	(E) 42" GRAB BAR (BOBRICK B-5806) TO REMAIN
02 327	(E) FLOOR MOUNTED TOILET TO REMAIN
02 328	(E) TOILET PARTITION TO REMAIN
02 329	(E) URINAL TO REMAIN
02 330	(E) ACCESSIBLE URINAL TO REMAIN
02 332	(E) LAVATORY TO REMAIN
02 333	(E) SURFACE MOUNTED PAPER TOWEL DISPENSER TO REMAIN
02 334	EXTENT OF PATCH/REPAIR TILE AS REQ'D TO PERFORM THE WORK; MATCH (E) ADJACENT TILE/GROUT
02 335	GRAB BAR MAY BE SHIFTED TO OPEN SIDE OF STALL ADJACENT TO THE FLUSH VALVE IF THERE IS AN INABILITY TO PROVIDE A 1-1/2" MINIMUM CLEARANCE BETWEEN THE FLUSH VALVE & GRAB BAR. PATCH/REPAIR TILE AS REQ'D; MATCH (E) ADJACENT TILE/GROUT
08 301	FLIP SWING ON (E) DOOR, MODIFY DOOR HARDWARE AS REQ'D.
09 703	PATCH/REPAIR CERAMIC WALL TILE TO MATCH (E)
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.5
10 102	PIPE WRAP
10 211	SURFACE-MOUNTED SEAT-COVER DISPENSER B-221
10 212	RECESSED MULTI-ROLL TOILET TISSUE DISPENSER BOBRICK B-3888
22 411	FLOOR MOUNTED WATER CLOSET PER PLUMBING DRAWINGS
22 431	LAVATORY PER PLUMBING DRAWINGS

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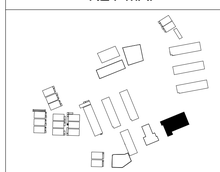

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6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER ST.
BUENA PARK, CA 90620

ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS

Date 10/19/2021	Project Number 21008
Scale As indicated	Drawing Number A7.1
Drawn / Author	Checked / Checker

PRINT DATE: 10/22/2021 4:21:23 PM
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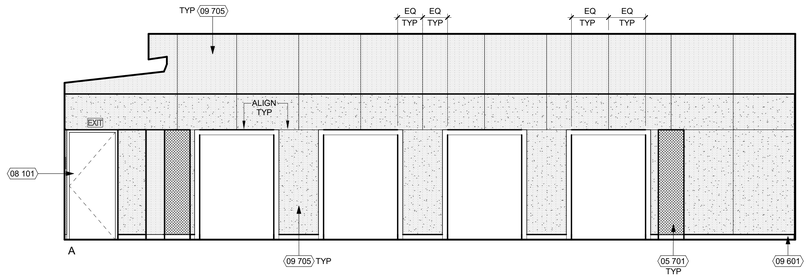

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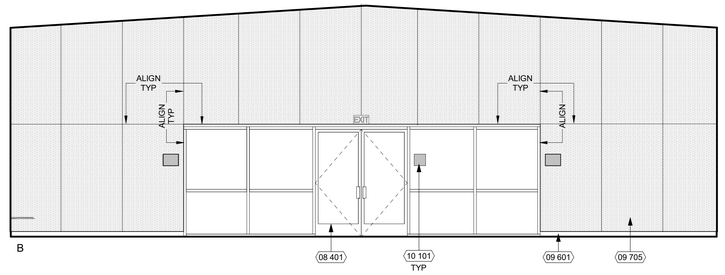

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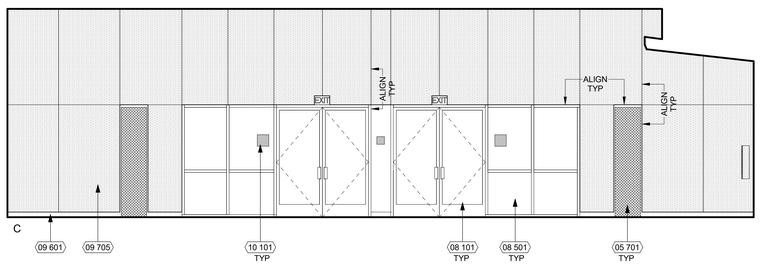

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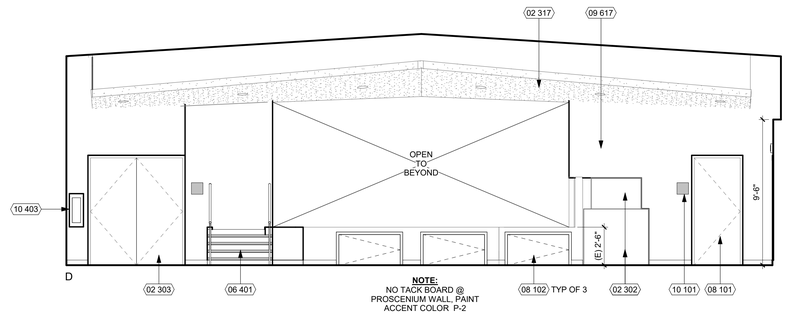

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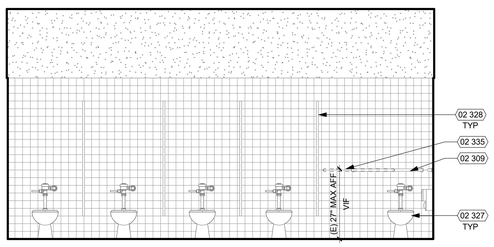
NOTE:
NO TACK BOARD @ PROSCENIUM WALL, PAINT ACCENT COLOR P-2

INTERIOR ELEVATIONS - MULTI-PURPOSE

1/4" = 1'-0" 08

NUMBER	NOTE
02 302	(E) WHEELCHAIR LIFT TO REMAIN, PROTECT IN PLACE
02 303	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 309	(E) 36" STAINLESS STEEL GRAB BAR WITH SNAP FLANGE BOBRICK B-5806 TO REMAIN
02 310	(E) SURFACE-MOUNTED SOAP DISPENSER BOBRICK B-2111 TO REMAIN
02 315	(E) TOILET PAPER DISPENSER TO REMAIN
02 316	(E) GLASS MIRROR WITH STAINLESS STEEL ANGLE FRAME BOBRICK B-290 TO REMAIN, PROTECT IN PLACE
02 317	(E) GYP. BD SOFFIT TO REMAIN, PATCH/REPAIR AS REQ'D; PAINT P-1
02 321	(E) FREE STANDING TRASH RECEPTACLE TO REMAIN
02 326	(E) 42" GRAB BAR (BOBRICK B-5806) TO REMAIN
02 327	(E) FLOOR MOUNTED TOILET TO REMAIN
02 328	(E) TOILET PARTITION TO REMAIN
02 331	(E) DOOR TO REMAIN, PROTECT IN PLACE
02 332	(E) LAVATORY TO REMAIN
02 333	(E) SURFACE MOUNTED PAPER TOWEL DISPENSER TO REMAIN
02 335	GRAB BAR MAY BE SHIFTED TO OPEN SIDE OF STALL ADJACENT TO THE FLUSH VALVE IF THERE IS AN INABILITY TO PROVIDE A 1-1/2" MINIMUM CLEARANCE BETWEEN THE FLUSH VALVE & GRAB BAR. PATCH/REPAIR TILE AS REQ'D; MATCH (E) ADJACENT TILE/GROUT
05 701	POWDER COATED PERFORATED METAL PANEL
06 401	WOOD STAIR
08 101	DOOR AND FRAME PER DOOR SCHEDULE ON SHEET A9.1
08 102	UNDER-PLATFORM CHAIR STORAGE DOOR/FRAME PER DOOR SCHEDULE ON SHEET A9.1
08 401	STOREFRONT DOOR PER WINDOW TYPES
08 501	STOREFRONT PER WINDOW ELEVATIONS
09 601	4" RUBBER WALL BASE PER FINISH LIST
09 617	FURRING ABOVE (E) WHEELCHAIR LIFT
09 705	VINYL WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
10 101	SIGNAGE PER SHEET A0.5
10 403	FIRE EXTINGUISHER (2A-10B:C) IN SEMI-RECESSED CABINET PER 10/A10.2



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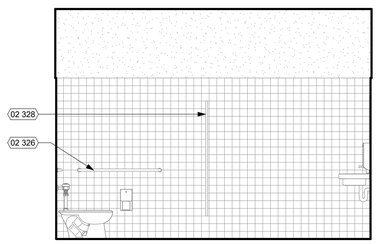

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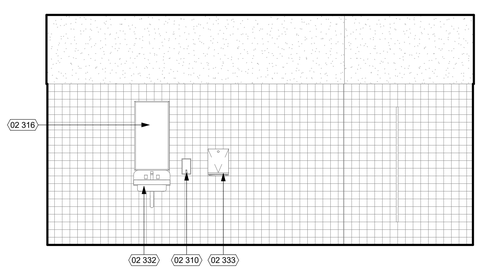

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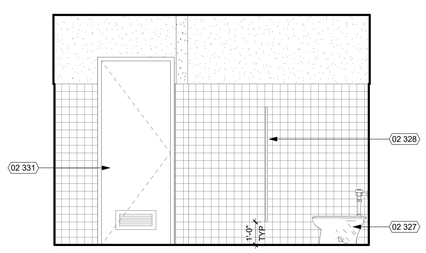

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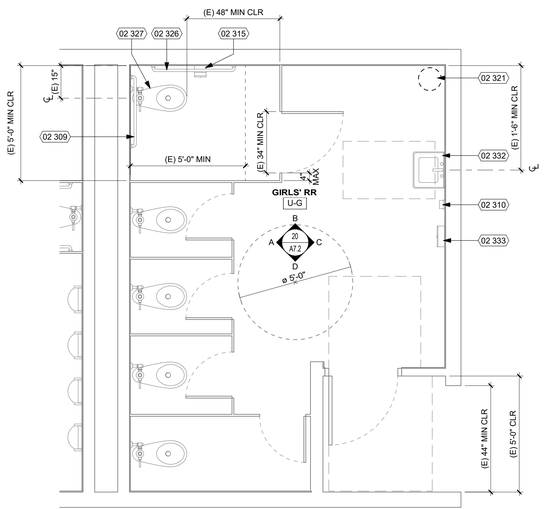
GIRLS' RESTROOM - U-G - INTERIOR ELEVATIONS

3/8" = 1'-0" 20



REF: 10 / A0.3

BLDG. U - GIRLS' RESTROOM - ENLARGED FLOOR PLAN

3/8" = 1'-0" 10

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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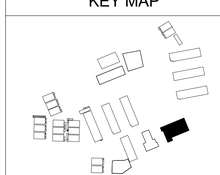
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

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ENLARGED ALTERATION FLOOR PLANS/INTERIOR ELEVATIONS

Date 10/19/2021	Project Number 21008
Scale As indicated	Drawing Number A7.2
Drawn Author	Checked Checker

PRINT DATE: 10/22/2021 4:21:25 PM
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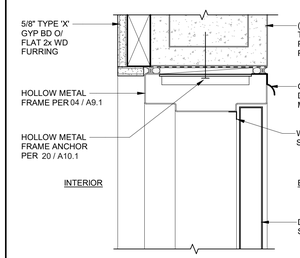
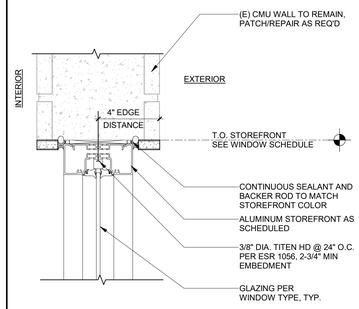
DOOR SCHEDULE

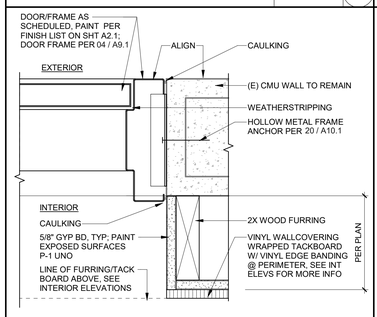
MARK	SIZE PAIR	SIZE PANEL WIDTH	SIZE HT	SIZE THK	DOOR TYPE	DOOR MAT.	DOOR FINISH	DOOR CORE	DOOR GLASS	DOOR RATING	LOUVER HT	LOUVER WD	HDW GROUP	HDW PANIC	HDW CLOSER	FRAME TYPE	FRAME MTL	FRAME FINISH	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS THRESHOLD	FRAME DETAILS OTHER	COMMENTS
MP-1A	PR	3'-0"	7'-0"		A	AL	FF	AL/GL	GL/T	-	-		1	YES	YES	A	AL	FF	21/A9.1	09/A9.1	10/A9.1		PAIRED WITH WINDOW TYPE 'B'
MP-1B	PR	3'-0"	7'-2"		A	AL	FF	AL/GL	GL/T				1	YES		A	AL	FF	21/A9.1	09/A9.1	10/A9.1		PAIRED WITH WINDOW TYPE 'A'
MP-1BA		3'-0"	7'-2"	1 3/4"	A	AL	FF	AL/GL	GL/T				6	YES	YES	A	AL	FF	24/A9.1	22/A9.1	25/A9.1		ADD ALTERNATE: FOLDING GLASS PARTITION
MP-1C	PR	3'-0"	7'-2"		A	AL	FF	AL/GL	GL/T				1	YES		A	AL	FF	21/A9.1	09/A9.1	10/A9.1		PAIRED WITH WINDOW TYPE 'A'
MP-1CA		3'-0"	7'-2"	1 3/4"	A	AL	FF	AL/GL	GL/T				6	YES	YES	A	AL	FF	24/A9.1	22/A9.1	25/A9.1		ADD ALTERNATE: FOLDING GLASS PARTITION
MP-1E		3'-0"	7'-0"	1 3/4"	B	HM	P	HM	-				2	YES	YES	A	HM	P	26/A9.1	27/A9.1	15/A9.1		
MP-1F		4'-0"	2'-0"	1 3/4"	B	HM	P	HM	-		-	-	4			A	HM	P	17/A9.1	17/A9.1	-		
MP-1G		4'-0"	2'-0"	1 3/4"	B	HM	P	HM	-				4			A	HM	P	17/A9.1	17/A9.1	-		
MP-1H		4'-0"	2'-0"	1 3/4"	B	HM	P	HM	-				4			A	HM	P	17/A9.1	17/A9.1	-		
MP-2A		3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-				3			(E)	(E)	(E)	(E)	(E)	(E)		
MP-10A		3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-				3			(E)	(E)	(E)	(E)	(E)	(E)		



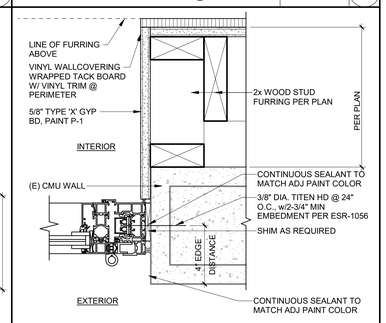
EXT HM HEAD 3" = 1'-0" 26



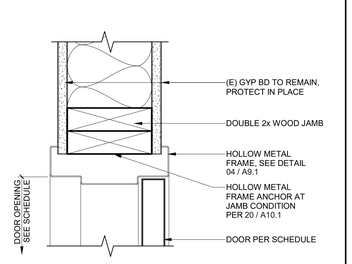
STOREFRONT HEAD @ PLASTER 3" = 1'-0" 21



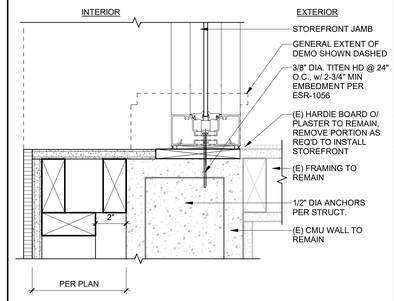
EXT HM DOOR JAMB 3" = 1'-0" 27



FOLDING ALUM GLASS WALL JAMB 3" = 1'-0" 22



INT HM DOOR HEAD/JAMB 3" = 1'-0" 17



EXT JAMB @ CMU WALL 3" = 1'-0" 12

DOOR GENERAL NOTES

MATERIALS AND FINISHES

1. ADJUST DOOR FRAME OPENING SIZES AS NECESSARY TO REFLECT VARIATIONS IN THE STRUCTURAL SLAB AND VARYING THICKNESS OF THE FLOOR FINISHES.

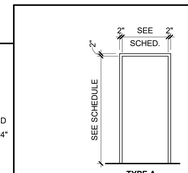
EXITING AND PATH OF TRAVEL

1. EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
2. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR BOTH INTERIOR AND EXTERIOR DOORS. REQUIRED FIRE DOORS: THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 POUNDS (66.7 N).
3. ALL REQUIRED EXIT DOORS SHALL BE OPERABLE FROM INSIDE WITHOUT THE USE OF ANY SPECIAL KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
4. ALL REQUIRED EXIT DOORS SHALL BE SIZED NOT LESS THAN 3'-0" WIDE AND 6'-8" HIGH AND BE CAPABLE OF OPENING 90 DEG. AND MOUNTED SO THAT THE CLEAR WIDTH OF THE EXIT WAY IS 32" MIN., U.O.N.
5. ALL REQUIRED EXIT DOORS SHALL SWING IN THE DIRECTION OF TRAVEL.
6. THE FLOOR OR LANDING LENGTH ON EACH SIDE OF AN EXIT DOOR SHALL BE LEVEL (<2% MAX. SLOPE) AND CLEAR AT LEAST 60 INCHES IN THE DIRECTION OF THE DOOR SWING (PULL SIDE) AND 48 INCHES ON THE PUSH SIDE, WHEN MEASURED AT RIGHT ANGLES FROM DOOR IN CLOSED POSITION. THE CLEAR WIDTH SHALL EXTEND 24 INCHES BEYOND THE STRIKE ON THE PULL SIDE OF ALL EXTERIOR EXIT DOORS AND 18 INCHES FOR INTERIOR EXIT DOORS. THE CLEAR WIDTH SHALL EXTEND 12 INCHES BEYOND THE STRIKE EDGE OF THE PUSH SIDE OF ALL EXIT DOORS. DOORS SHALL BE EQUIPPED WITH BOTH A LATCH AND CLOSER. SEE DETAIL 1 / A10.1
7. LATCHING AND LOCKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN THE PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVEL-TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATED BARS OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE.

HARDWARE

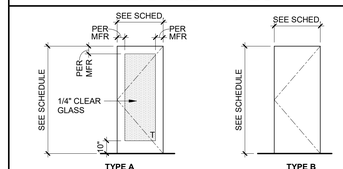
1. HAND ACTIVATED HARDWARE SHALL BE BETWEEN 34" AND 44" A.F.F. COORDINATE MOUNTING HEIGHT. DO NOT TO OBSTRUCT DOOR VISION LIGHT WHERE OCCURS.
2. PANIC HARDWARE SHALL BE PROVIDED ON EXIT DOORS SERVING AN OCCUPANT LOAD OF 50 OR MORE. PROVIDE WALL OR FLOOR MOUNTED DOOR STOPS FOR ALL DOORS. LOCATE FLOOR MOUNTED DOOR STOP WITHIN 4" MAX. OF WALL. PROVIDE BACKING AT ALL WALL MOUNTED DOOR STOPS.
3. PROVIDE NON-REMOVABLE PINS ON ALL HINGES ACCESSIBLE FROM THE EXTERIOR.
4. PROVIDE CYLINDER GUARDS ON ALL MORTISED OR RIM TYPE CYLINDER LOCKS WHICH PROJECT BEYOND THE FACE OF THE DOOR.
5. DOOR CLOSERS SHALL CONFORM WITH 2019 CBC 11B-404.2.8.1
6. DOORS TO INCLUDE FACTORY INSTALLED MAGNETIC CONTACTS, 3/8" RECESSED PRESS FIT, COLOR TO MATCH WINDOW FRAME, AT ALL CLASSROOM DOORS, SEE MECHANICAL
7. ELECTRIFIED HARDWARE: COORDINATE ALL ELECTRICAL REQUIREMENTS WITH DIVISIONS 26 AND 27
8. NEW BUILDINGS SERVING K-12, CONSTRUCTED WITH STATE FUNDS, ON NEW OR EXISTING CAMPUSES WITH INDIVIDUAL ROOMS WITH AN OCCUPANT LOAD OF 5 OR MORE AND BUILDING ENTRANCES SHALL BE EQUIPPED WITH INTERIOR LOCKING DOOR HARDWARE PER AB-211 (EXCEPT PUPIL RESTROOMS). THIS REQUIREMENT APPLIES REGARDLESS OF OCCUPANCY CLASSIFICATION (ADMIN., PRESS BOXES, ETC.); AND IS APPLICABLE TO "LEASE-BACK" PROJECTS. PROVIDE A COPY OF THE MANUFACTURER'S CUT SHEETS AND HARDWARE LISTING FOR REVIEW. (REF: 17075.50 (a) (b), CAL. ED. CODE).
9. KICKPLATES PER HARDWARE GROUPS, SEE DETAIL

FRAME TYPES



TYPE A

NOTE: FOR TYP HM FRAME, SEE 04 / A9.1



TYPE A STOREFRONT

TYPE B FLUSH SOLID PANEL

WINDOW GENERAL NOTES

1. FOR DOOR/WINDOW REFERENCE TAGS, SEE 10 / A2.1
2. ALL OVERALL DIMENSIONS CORRESPOND TO WINDOW ROUGH OPENINGS UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL BE SOLEY RESPONSIBLE TO COORDINATE ROUGH OPENING SIZE WITH REQUIRED SHIM SPACERS AND FINISH FRAME DIMENSION.
4. ALL ROUGH OPENING DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO WINDOW FABRICATION.
5. ALL WINDOWS SHALL BE RATED STC 35 MINIMUM.
6. SAFETY GLAZING IS REQUIRED WHEN BOTTOM OF EXPOSED EDGE OF GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE, PER "T" NOTED ON DOOR/WINDOW TYPES, THIS SHEET.
7. SAFETY GLAZING SHALL COMPLY WITH CBC SECTION 2406.
8. ANY WINDOW SECTION WHOSE NEAREST VERTICAL EDGE IS WITHIN 24" FROM A DOOR IN CLOSED POSITION AND WHOSE BOTTOM EDGE IS LESS THAN 60" ABOVE THE WALKING SURFACE SHALL BE TEMPERED AS INDICATED IN WINDOW TYPES, THIS SHEET. ALSO, ANY WINDOW SECTION WHERE THE LOWEST EDGE OF THE GLAZING MATERIAL IS LESS THAN 18" ABOVE THE FLOOR AND WHOSE TOP EDGE IS GRATER THAN 36" ABOVE THE FLOOR AND WHERE THE SECTION IS GREATER THAN 9 SF AND IS WITHIN 36" HORIZONTALLY OF A WALKING SURFACE SHALL BE TEMPERED.

DOOR/WINDOW ABBREVIATIONS

CORE:
GL GLASS

DOOR PANEL FINISH:
FF FACTORY FINISH

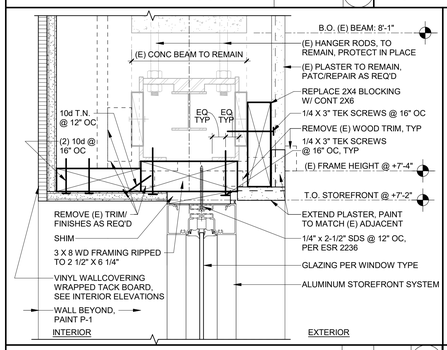
DOOR FRAME FINISH:
FF FACTORY FINISH
PTD PAINTED - SEE FINISH LIST

DOOR PANEL / FRAME MATERIAL:
AL ALUMINUM
HM HOLLOW METAL
PC POWDER COATED
STL STEEL

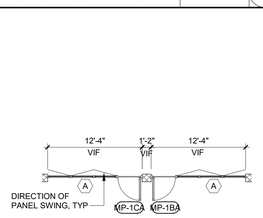
HARDWARE:
PH PANIC - SEE EXITING FLOOR PLAN

GLAZING TYPE PER SPEC 08 80 00:
SP (1) 1/4" THICK SINGLE GLAZING PANE
T TEMPERED, CATEGORY II (PER CBC 2019 SECTION 2406)

FRAME FINISH:
P PAINTED
PC POWDER COATED
FF FACTORY FINISH

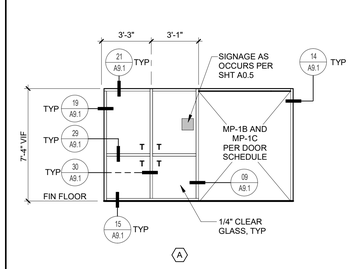


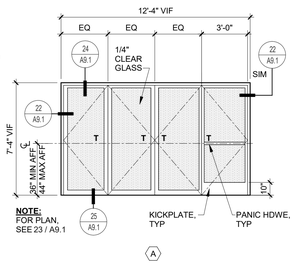
STOREFRONT HEAD 3" = 1'-0" 28

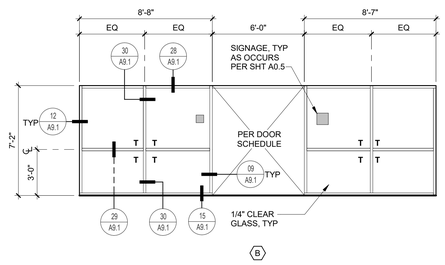


ADD ALTERNATE-FOLDING ALUMINUM GLASS WALL 1/8" = 1'-0" 23

DOOR TYPES

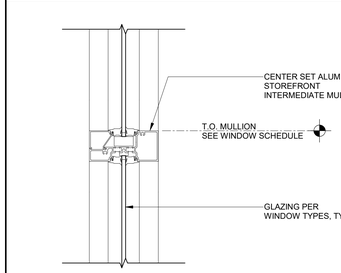




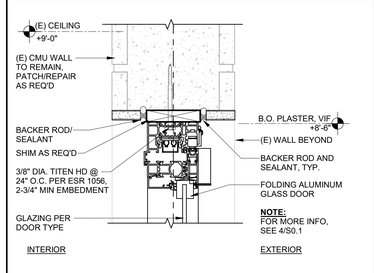


ADD ALTERNATE- ALUM FOLDING GLASS WALL

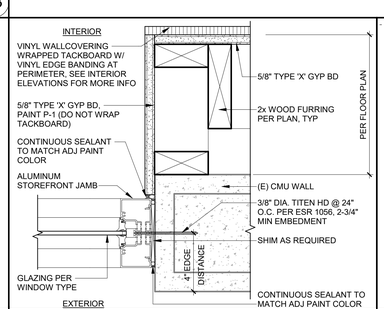
WINDOW TYPES



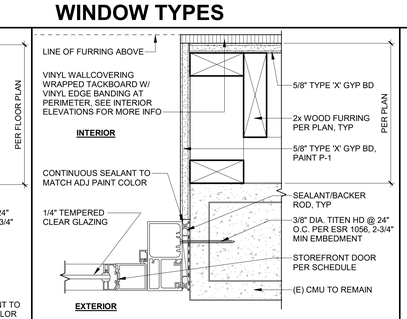
HORIZONTAL MULLION 3" = 1'-0" 29



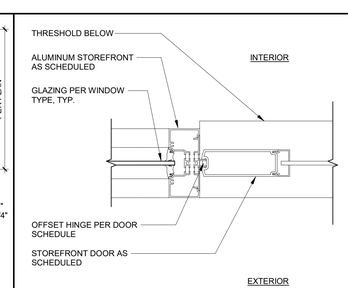
FOLDING ALUM GLASS WALL HEAD 3" = 1'-0" 24



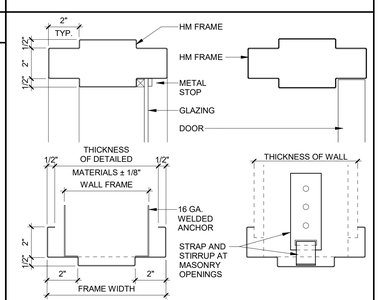
STOREFRONT JAMB 3" = 1'-0" 19



SF DOOR JAMB @ FURRING 3" = 1'-0" 14

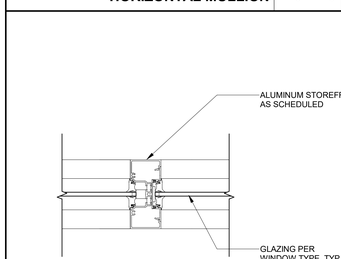


ALUMINUM DOOR JAMB AT SF 3" = 1'-0" 09

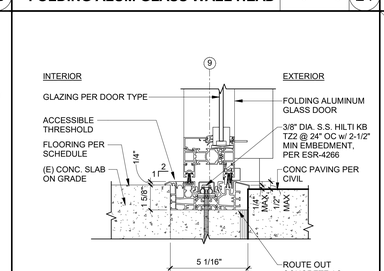


NOTES: LOCATION OF WELDED ANCHORS
1. JAMBS: 6" FROM TOP OF FRAME, 9" FROM BOTTOM OF FRAME, 24" MAX. O.C.
2. HEAD: 6" FROM EACH END OR FRAME, 24" MAX. O.C.

TYP HM FRAME 3" = 1'-0" 04

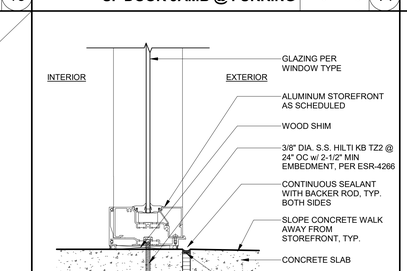


VERTICAL MULLION 3" = 1'-0" 30

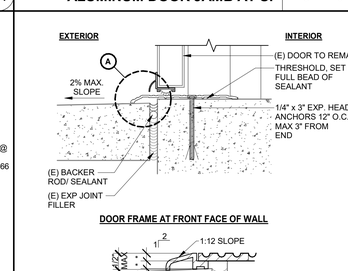


FOLDING ALUM GLASS WALL SILL 3" = 1'-0" 25

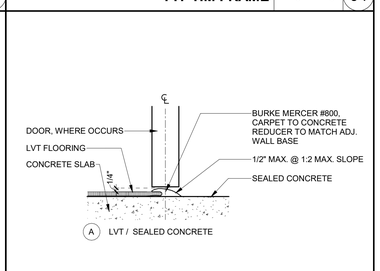
NOT USED



SILL AT STOREFRONT 3" = 1'-0" 15



EXT THRESHOLD 3" = 1'-0" 10



INTERIOR FLOOR TRANSITIONS 3" = 1'-0" 05

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SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

STUDIO W ARCHITECTS

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www.StudioW-Architects.com

ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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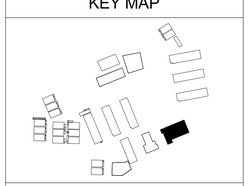
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER ST.
BUENA PARK, CA 90620

DOOR SCHEDULE/WINDOW TYPES

Date	Project Number
10/19/2021	21008
Scale	Drawing Number
As indicated	A9.1
Drawn / Checked	
GC/DP/KM / MH/GC	

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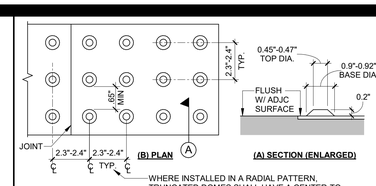
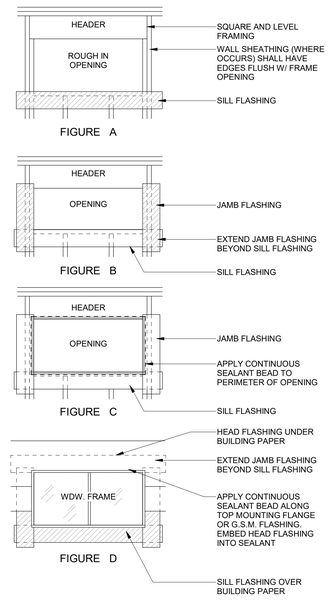


DETECTABLE WARNINGS:

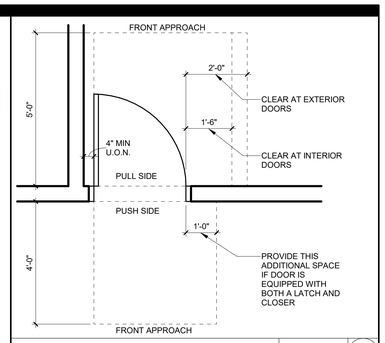
1. **HAZARDOUS VEHICULAR AREAS** DETECTABLE WARNINGS AT HAZARDOUS VEHICULAR AREAS SHALL BE 36 INCHES IN WIDTH.
2. **ONLY APPROVED DSA-AC DETECTABLE WARNING PRODUCTS** AND DIRECTIONAL SURFACES SHALL BE INSTALLED PER THE CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 1, CH 5, ARTICLES 2.3, & 4. REFER TO CCR TITLE 24, PART 12, SEC 12 - 11B.705 FOR BLDG/FACILITY ACCESS SPEC'S FOR PRODUCT APPROVAL FOR DETECTABLE WARNING PRODUCTS/DIRECTIONAL SURFACES.
3. **COLOR AND CONTRAST** THE MAT'L USED TO PROVIDE VISUAL CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. WARNING SURFACES SHALL BE YELLOW AND APPROX. FS 33538 OF FEDERAL STD 595A OR SHALL PROVIDE A 70% MIN VISUAL CONTRAST W/ ADJ. WALKING SURFACES. (HAZARDOUS VEHICULAR AREAS SHALL ONLY ALLOW YELLOW, LISTED ABOVE)

TRUNCATED DOMES 1/4" = 1'-0" 11

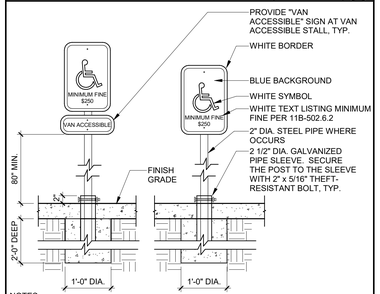
1. INDIVIDUALLY FLASH ALL EXTERIOR OPENINGS FOR FIXTURES SUCH AS WINDOWS, DOORS, AND VENTS TO MAKE THEM WATER TIGHT. PENETRATION FLASHING MATERIAL SHALL BE BARRIER COATED REINFORCED AND SHALL PROVIDE 4 HOUR MIN. PROTECTION FROM WATER PENETRATION WHEN TESTED IN ACCORDANCE WITH ASTM D-779. SEALANT SHALL COMPLY TO FF T-S- 1657. IN HIGH WIND AREAS A WATERPROOF SHEET MEMBRANE SHALL BE USED OVER SOLID BACKING.
2. FOR NAIL-ON-FLANGE TYPE FIXTURES A STRIP OF APPROVED FLASHING MATERIAL SHALL BE AT LEAST 9" WIDE. FLASHING SHALL BE APPLIED IN A WEATHERBOARD FASHION AROUND THE FULL PERIMETER OF THE OPENING.
3. APPLY THE FIRST STRIP HORIZONTALLY IMMEDIATELY BELOW THE SILL. CUT IT SUFFICIENTLY LONG TO EXTEND PAST EACH SIDE OF THE WINDOW, SO THAT IT PROJECTS BEYOND THE VERTICAL FLASHING TO BE APPLIED LATER. FASTEN THE TOP EDGE OF THE SILL FLASHING TO THE FRAMING, BUT DO NOT FASTEN THE LOWER EDGE. SO THE WEATHER-RESISTIVE BARRIER APPLIED LATER MAY BE SLIPPED UP AND UNDERNEATH THE FLASHING IN WEATHERBOARD FASHION. (**SEE FIGURE A**)
4. NEXT, FASTEN STRIPS OF FLASHING AT EACH VERTICAL EDGE (JAMB) OF THE OPENING. RUN THIS FLASHING BEYOND THE SILL FLASHING AND ABOVE WHERE THE HEAD FLASHING WILL INTERSECT. (**SEE FIGURE B**)
5. APPLY A CONTINUOUS SEAL TO THE BACKSIDE (INTERIOR) OF THE MOUNTING FLANGE NEAR THE OUTER EDGE OR A CONTINUOUS SEAL TO THE PERIMETER OF THE OPENING AT A POINT TO ENSURE CONTACT WITH THE BACKSIDE (INTERIOR) OF THE MOUNTING FLANGE. (**SEE FIGURE C**)
6. FOR FIXTURES WITHOUT A NAIL-ON-FLANGE THE FLASHING SHALL BE 12" MIN. WIDE AND EXTEND INTO THE ROUGH FRAME AT THE SILL AND JAMB IN A WEATHERBOARD FASHION.
7. THE FIXTURE SHALL THEN BE INSTALLED.
8. NEXT, APPLY A CONTINUOUS SEAL AT THE TOP (HEAD) MOUNTING FLANGE OR G.S.M. HEAD FLASHING AND EMBED THE BOTTOM OF THE HEAD FLASHING OVER THE SEALANT AND THE MOUNTING FLANGE OR G.S.M. FLASHING. CUT THIS FLASHING SUFFICIENTLY LONG SO THAT IT WILL EXTEND BEYOND EACH JAMB FLASHING. FASTEN IN PLACE. (**SEE FIGURE D**)
9. APPLY REMAINING WEATHER-RESISTIVE BARRIER IN A WEATHERBOARD FASHION WITH THE SILL FLASHING LAPPING OVER THE TOP, AND THE HEAD AND JAMB FLASHING BELOW.
10. BASED UPON INDUSTRY STANDARDS APPROVED BY THE CALIFORNIA ASSOCIATION OF WINDOW MANUFACTURERS, (CAWM).



TYP DOOR/WINDOW FLASHING 1/4" = 1'-0" 8

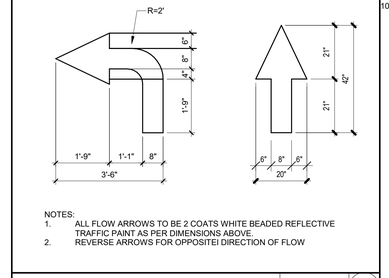


TYPICAL DOOR CLEARANCES 1/2" = 1'-0" 1



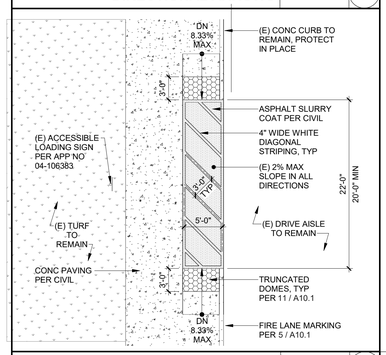
NOTES:
1. ACCESSIBLE SIGN TO BE LOCATED ON FACE OF COLUMN U.O.N.
2. ALL TEXT TO BE 2" IN HEIGHT WHEN MOUNTED ABOVE 70" PER 11B-703.5.5

ACCESSIBLE STALL SIGNAGE 3/4" = 1'-0" 2

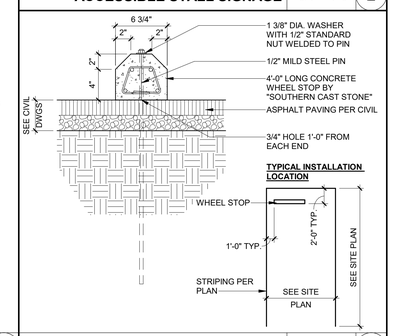


NOTES:
1. ALL FLOW ARROWS TO BE 2 COATS WHITE BEADED REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.
2. REVERSE ARROWS FOR OPPOSITEI DIRECTION OF FLOW

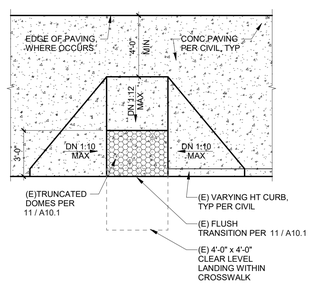
DIRECTIONAL ARROWS 1/2" = 1'-0" 7



ACCESSIBLE DROP-OFF 1/8" = 1'-0" 6

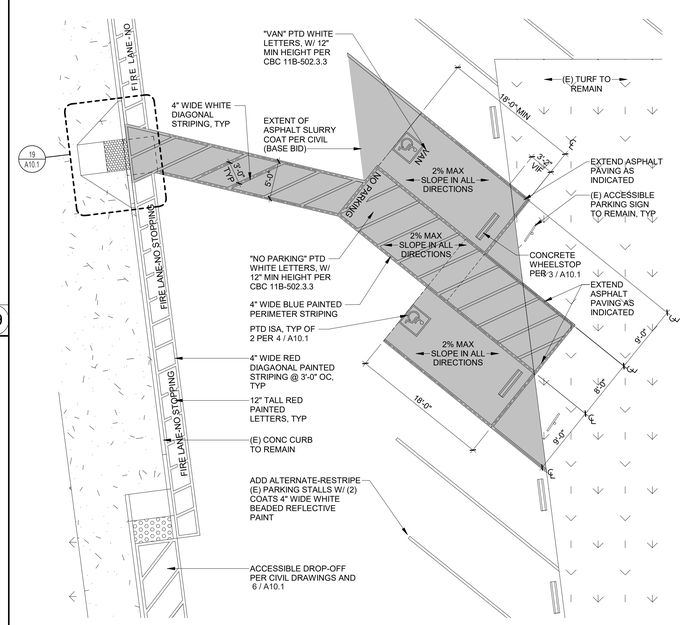


WHEEL STOP 1 1/2" = 1'-0" 3

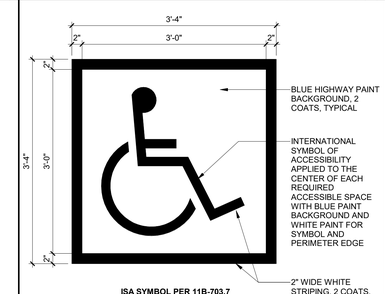


REF: 10 / A10.1

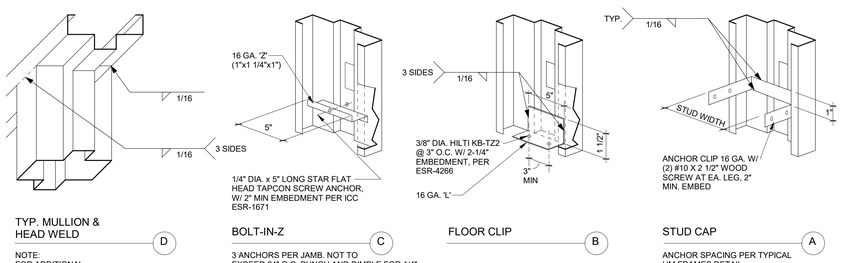
(E) CURB CUT 1/4" = 1'-0" 19



ACCESSIBLE PARKING 1/8" = 1'-0" 10



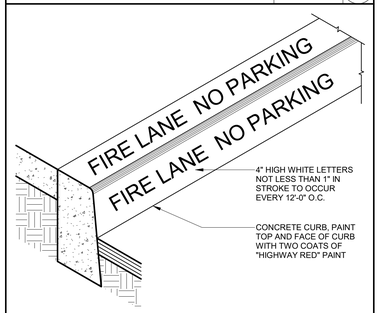
ISA PARKING STALL STRIPING 1" = 1'-0" 4



NOTES:

1. REFER TO PROFILES.
2. ALL HOLLOW METAL FRAME/JAMBS SHALL BE CUT FOR STANDARD UNIT LOCK STRIKES 3/4" HIGH.
3. FRAME DIMENSIONS ARE FROM FINISH PAVING. FRAME DIMENSIONS MAY VARY DUE TO FINISH MATERIALS.
4. SEE 'RATING' ON DOOR SCHEDULE FOR REQUIRED RATED DOORS.
5. VERIFY ALL DOOR AND FRAME OPENING SIZES AND WALL AND DOOR FRAME WIDTHS ON SITE.
6. PER CBC 715.4, APPROVED FIRE DOOR HARDWARE AND FIRE DOOR FRAMES INCLUDING THE ANCHORAGE THEREOF SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTING.
7. ADHERE TO UBC STANDARD 7-2 FOR INSTALLATION OF DOOR FRAMES.
8. UNDERCUT ALL DOORS TO CLEAR FLOOR FINISH BY 1/4" EXCEPT AT RATED DOORS

TYP HM FRAME ATTACHMENT 12" = 1'-0" 20



FIRE LANE MARKING 1 1/2" = 1'-0" 5

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
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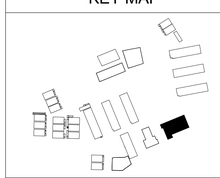
KEY MAP



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
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EXTERIOR DETAILS

Date	Project Number
10/19/2021	21008
Scale	Drawing Number
As indicated	A10.1
Drawn / Checked	
Author / Checker	

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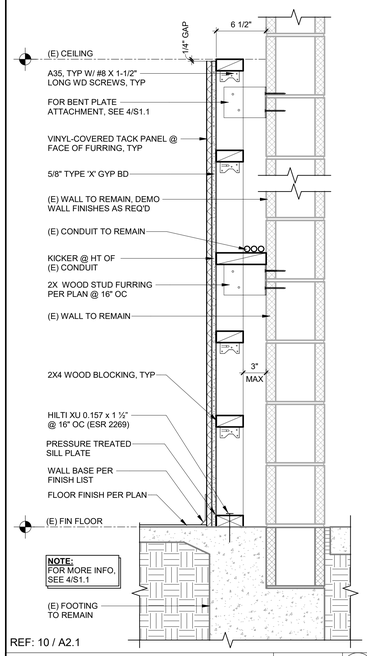
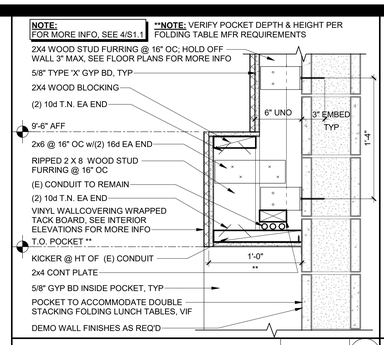
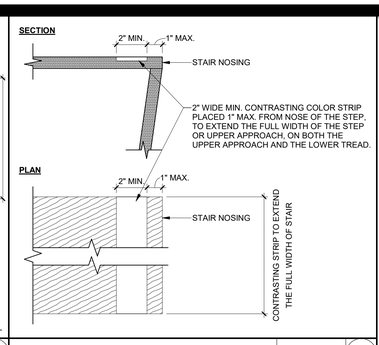


REF: 10 / A2.1

WALL FURRING @ MPR CMU WALL 1 1/2" = 1'-0" 27



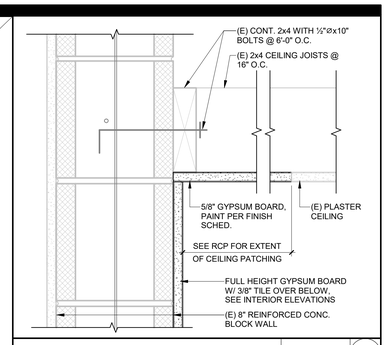
LUNCH TABLE POCKET FRAMING 1 1/2" = 1'-0" 21



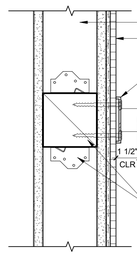
INTERIOR STAIR NOSING 3" = 1'-0" 16

NOT USED

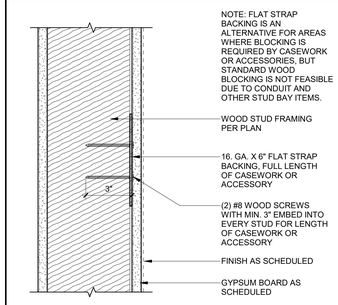
NOT USED



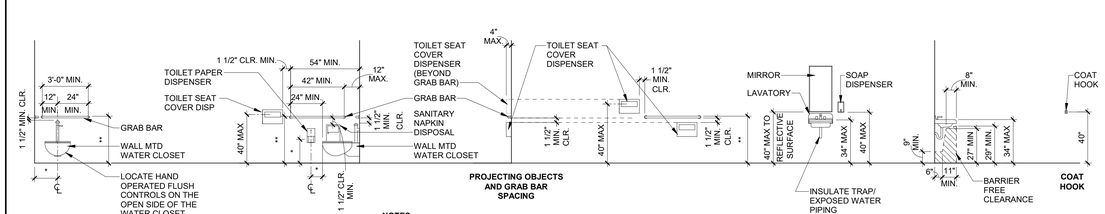
GYP BOARD CEILING 3" = 1'-0" 1



GRAB BAR ANCHORAGE 3" = 1'-0" 22

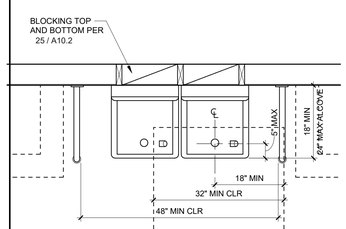


FLAT STRAP BACKING 3" = 1'-0" 17

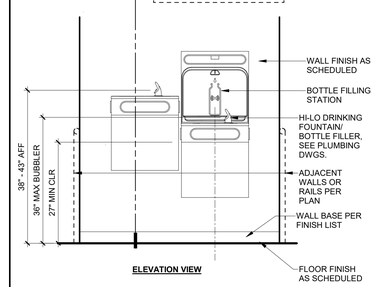


NOTES:
1. ALL DIMENSIONS MARKED " * ", SEE 4 / A10.2
2. SEE TOILET FIXTURE/ACCESSORY SCHEDULE FOR MORE INFO
3. FOR TYPICAL ACCESSORY MOUNTING SEE DETAIL 13 / A10.2
4. FOR AGE GROUPS 9-12, ALL DIMENSIONS MARKED " ** " = 27" MAX. A.F.F., SEE 4 / A10.2 FOR OTHER AGE GROUPS.

PLUMBING FIXTURE AND RESTROOM ACCESSORY MOUNTING HEIGHTS 1/4" = 1'-0" 2



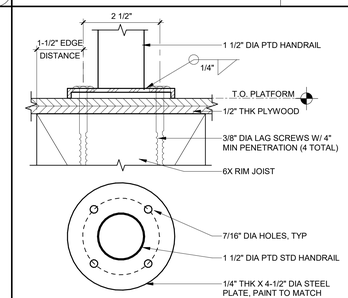
PLAN VIEW



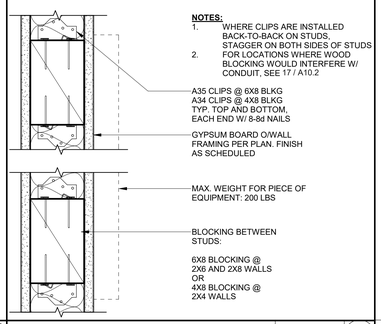
ELEVATION VIEW

AGE GROUP: ADULT

ACCESSIBLE DRINKING FOUNTAIN 3/4" = 1'-0" 24

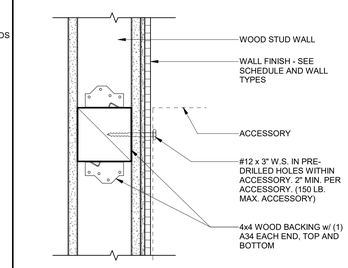


FLOOR MOUNTED HANDRAIL 6" = 1'-0" 23



NOTES:
1. WHERE CLIPS ARE INSTALLED BACK-TO-BACK ON STUDS, STAGGER ON BOTH SIDES OF STUDS
2. FOR LOCATIONS WHERE WOOD BLOCKING WOULD INTERFERE W/ CONDUIT, SEE 17 / A10.2

TYPICAL BLOCKING 3" = 1'-0" 18

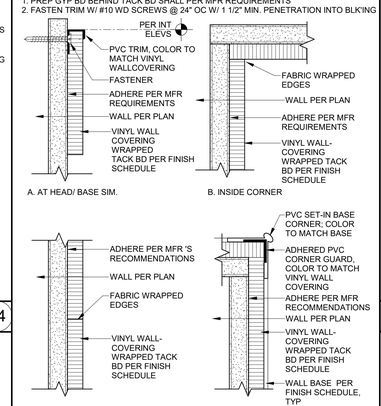


TYPICAL ACCESSORY MOUNTING 3" = 1'-0" 13

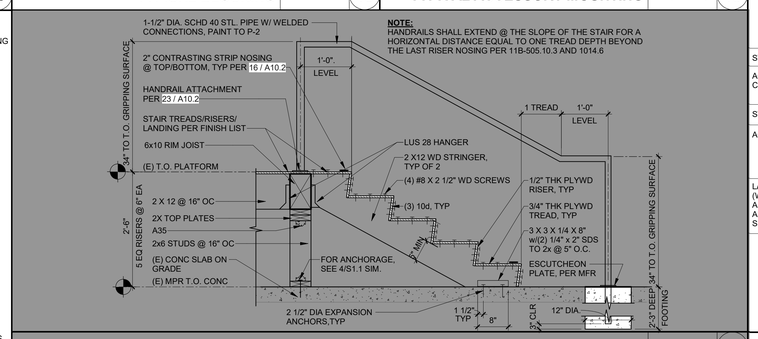
FIXTURE	DIMENSION REFERENCE	ADULT DIMENSION	PER TABLE 11B-604.9 (2019 CBC) SUGGESTED DIMENSIONS FOR CHILDREN		2019 CBC REFERENCES: T: TABLE S: SECTION F: FIGURE
			AGES 5-8	AGES 9-12	
GRAB BAR	TOP OF GRIPPING SURFACE	33" - 36"	20" - 25"	25" - 27"	T: 11B-604.9
TOILET PARTITION/ URINAL SCREEN	TOE CLEARANCE	9" MIN.	12" MIN.		
SOAP DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
ELECTRIC HAND DRYER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART	4" MAX PROJECTION FROM WALL, TYP		S: 11B-603.5
PAPER TOWEL DISPENSER/ WASTE RECEPTACLE	ABOVE FINISH FLOOR	40" MAX. TO TOP OF OPENING			S: 11B-603.5
SEAT COVER DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
MIRROR	BOTTOM EDGE OF REFLECTING SURFACE	40" MAX. ABOVE LAVATORY OR COUNTERTOP 35" MAX. NOT ABOVE LAVATORY OR COUNTERTOP			S: 11B-603.3
	BOTTOM EDGE OF REFLECTING SURFACE	20" MAX. IN DRESSING, FITTING, & LOCKER ROOMS			S: 11B-803.6
TOILET PAPER DISPENSER	OUTLET HEIGHT	19" MIN.	14" - 17"	17" - 19"	T: 11B-604.9 S: 11B-604.7
	FURTHEST IN FRONT OF WATER CLOSET	7" MIN. - 9" MAX. TO CENTERLINE OF DISPENSER			
SANITARY NAPKIN DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
SANITARY NAPKIN DISPOSAL	BETWEEN REAR WALL AND TOILET PAPER DISPENSER	19" MIN. A.F.F. TO BOTTOM OF OPENING	N/A		
COAT HOOK	ABOVE FINISH FLOOR - TOP OF HOOK	40" - 48"			S: 11B-604.8.3
HI-LO DRINKING FOUNTAIN	HIGH SPOUT HEIGHT	38" MIN. - 43" MAX.			S: 11B-602.7
	LOW SPOUT APPROACH, HEIGHT, AND LOCATION FROM FRONT EDGE OF THE UNIT INCLUDING BUMPERS	FRONT APPROACH PER 11B-306, 36" MAX. A.F.F., AND 5" MAX. FROM FRONT EDGE OF UNIT.	FRONT APPROACH PER 11B-306, 30" MAX. A.F.F., AND 3-1/2" MAX. FROM FRONT EDGE OF UNIT.		S:11B-602.2-EXC. S:11B-602.4 S:11B-602.5
	OPERABLE PARTS	6" MAX. FROM FRONT EDGE OF UNIT			S: 11B-602.3
	PROJECTION	18" - 19"			S: 11B-602.9
STANDARD WATER CLOSET					
ACCESSIBLE WATER CLOSET	CENTERLINE FROM WALL (TOILET OFFSET)	17" - 18" WHEEL CHAIR 17" - 19" AMBULATORY	12" - 15"	15" - 18"	T: 11B-604.9
	SEAT HEIGHT (TOP OF SEAT)	17" - 19"	12" - 15"	15" - 17"	T: 11B-604.9
STANDARD URINAL	RIM HEIGHT	24"			
ACCESSIBLE URINAL	RIM HEIGHT	17" MAX.			S: 11B-605.2
	PROJECTION	13 1/2" MIN.			S: 11B-605.2
	FLUSH CONTROL HEIGHT	44" MAX.			S: 11B-605.4
LAVATORY (W/ INSULATED SUPPLY AND DRAIN PIPES. NO ABRASIVE SURFACES OR SHARP EDGES ALLOWED.)	SINK RIM HEIGHT	34" MAX.	31" MAX.		S: 11B-606.2 S: 11B-606.3
	SINK KNEE CLEARANCE	27" MIN. KNEE CLEARANCE/ 29" APRON	24" MIN.		S: 11B-606.2 F: 11B-306.3

NOTES:
1. ALL FIXTURES AND ACCESSORIES ARE ACCESSIBLE UNLESS OTHERWISE NOTED OR DIMENSIONED.
2. SEE ENLARGED TOILET PLAN DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
3. ALL ACCESSORIES ARE TO BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 3'-4" FROM FLOOR TO CENTER OF FUNCTIONAL POINT.
4. ALL HEIGHT DIMENSIONS ARE A.F.F. (OR A.F.G. FOR EXTERIOR), ALL HORIZONTAL DIMENSIONS ARE TO FACE OF FINISH.
5. FOR TYPICAL ACCESSORY BACKING INFORMATION, SEE DETAIL 13 / A10.2

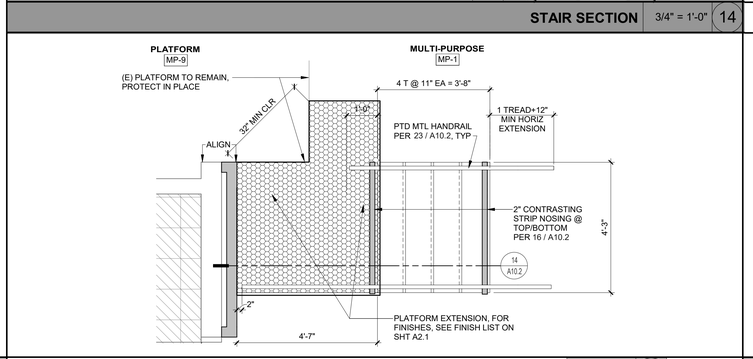
TOILET FIXTURES AND TOILET ACCESSORY SCHEDULE 1/2" = 1'-0" 4



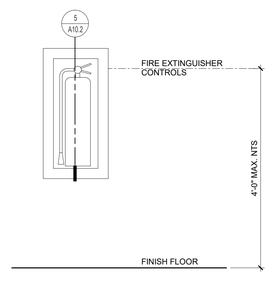
TACKBOARD ATTACHMENT 6" = 1'-0" 20



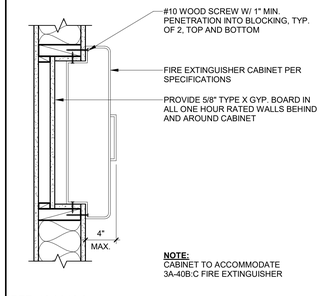
STAIR SECTION 3/4" = 1'-0" 14



ENLARGED STAIR PLAN 1/2" = 1'-0" 15



FIRE EXTINGUISHER CABINET MOUNTING 1" = 1'-0" 10



NOTE:
CABINET TO ACCOMMODATE 3A-40B:C FIRE EXTINGUISHER

REF: 10 / A10.2

FIRE EXTINGUISHER CABINET ANCHORAGE 1 1/2" = 1'-0" 5

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

STUDIO W ARCHITECTS

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400 Spectrum Center Drive, Suite 1640
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Ren.: 9/30/23 STATE OF CALIFORNIA DATE SIGNED 10/15/2021	

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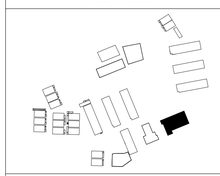
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

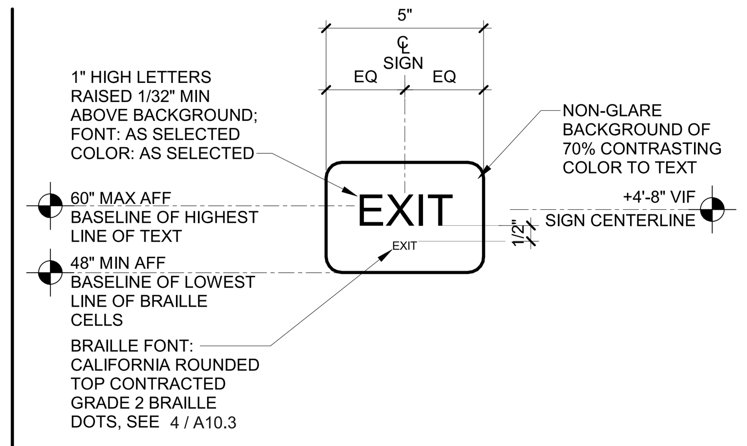
ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER ST.
BUENA PARK, CA 90620

INTERIOR DETAILS

Date 10/19/2021	Project Number 21008
Scale As indicated	Drawing Number A10.2
Drawn / Checked	
Author / Checker	

PRINT DATE: 10/22/2021 4:21:30 PM
FILE PATH: C:\Users\aysdn\Documents\21008-Buena-Park-USD-Corey-MPR-A19_aysdn.rvt

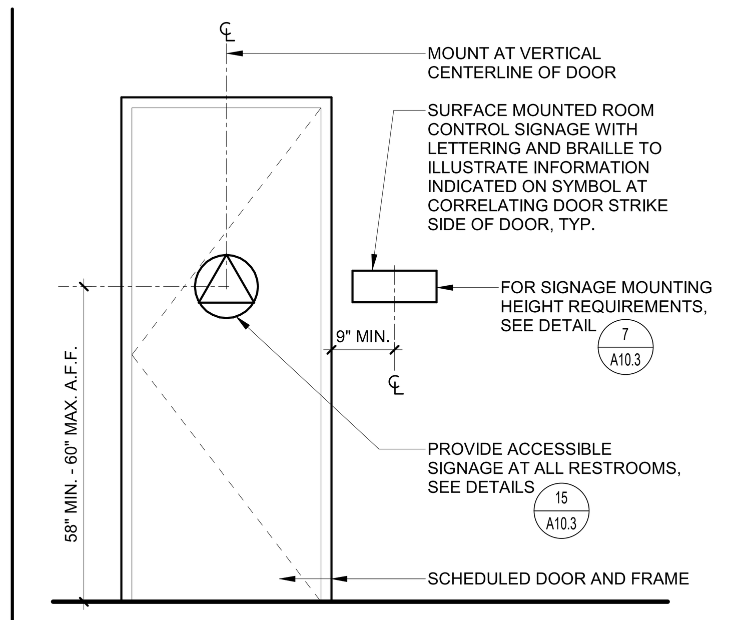
EXIT SIGN "S3" — 3" = 1'-0" — 11



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6/A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5/A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 1/A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7/A10.3

SIGN MOUNTING ELEVATION — 1/2" = 1'-0" — 6



TYPICAL SIGNAGE NOTES — 12" = 1'-0" — 1

SIGNAGE GENERAL NOTES

1. FOR TYPICAL MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TYPES, SEE 5 / A10.3
3. FOR SIGNAGE MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

SIGNAGE KEYNOTES

(1) 1/4" THICK EXTRUDED CLEAR ACRYLIC SIGN WITH NON GLARE BACKGROUND OF 70% CONTRASTING COLOR TO TEXT AND ONE PIECE CONSTRUCTION PER SPEC BACKGROUND COLOR:

(2A) 1/32" RAISED TEXT, CENTER JUSTIFIED ON PLAQUE
TEXT STYLE: HELVETICA, ALL CAPS
TEXT HEIGHT: 3/4" U.O.N.
TEXT COLOR:

(2B) 1/32" RAISED TEXT, LEFT JUSTIFIED
STYLE: HELVETICA, ALL CAPS
TEXT HEIGHT: 3/4" U.O.N.
TEXT COLOR:

(3) VERIFY ROOM NAMES/NO'S PRIOR TO FABRICATION; 10 LETTERS PER LINE, MAX

(4) CALIFORNIA ROUNDED TOP CONTRACTED GRADE 2 BRAILLE BELOW RAISED TEXT (11B-703.3.2). DISTANCE FROM BOTTOM OF RAISED LETTERS TO TOP OF BRAILLE CHARACTERS SHALL BE 3/8" MINIMUM AND 1/2" MAXIMUM. BRAILLE TO BE CENTER JUSTIFIED OR LEFT JUSTIFIED TO MATCH RAISED TEXT. FOR MORE INFORMATION ON BRAILLE REQUIREMENTS, SEE DETAIL 4 / A10.3

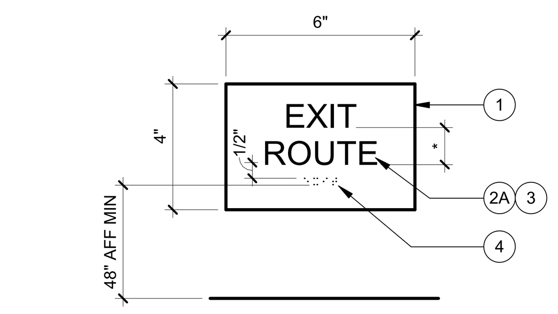
(5) INTERNATIONAL SYMBOL OF ACCESSIBILITY PICTOGRAM; COLOR:

(6) 1/8" WIDE RAISED DECORATIVE STRIPE-COLOR TO MATCH TEXT

(7) RAISED IMAGE-COLOR:

(8) CONTRAST 70% WITH DOOR COLOR

EXIT ROUTE SIGN "S4" — 3" = 1'-0" — 12



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6/A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5/A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 1/A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7/A10.3
5. * FOR LINE SPACING REQUIREMENTS, SEE 4/A10.3

SIGNAGE MOUNTING HEIGHTS — 6" = 1'-0" — 7

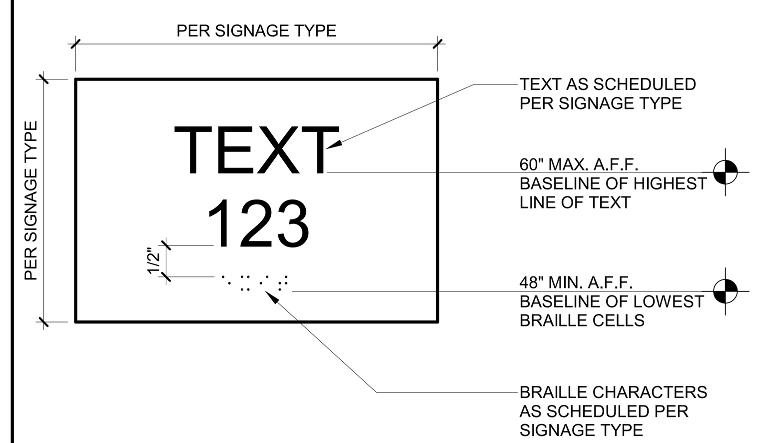


TABLE 11B-703.3.1
BRAILLE DIMENSIONS

MEASUREMENT RANGE	MINIMUM IN INCHES MAXIMUM IN INCHES
DOT BASE DIAMETER	0.059" (1.5MM) TO 0.063" (1.6MM)
DISTANCE BETWEEN TWO DOTS IN THE SAME CELL *	0.100" (2.5MM)
DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS *	0.300" (7.6MM)
DOT HEIGHT RANGE	0.025" (0.6MM) TO 0.037 (0.9MM)
DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW *	0.395" (10MM) TO 0.400" (10.2MM)
* MEASURED CENTER TO CENTER	

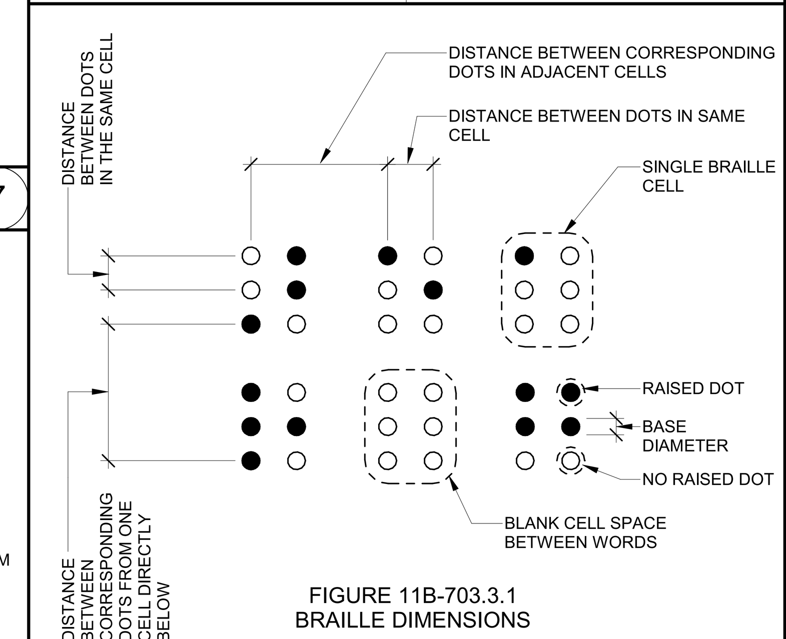
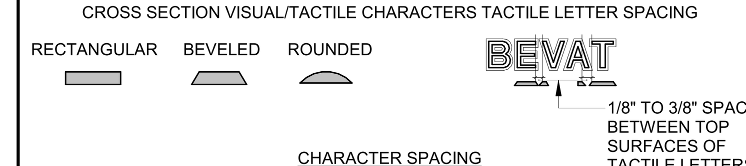


FIGURE 11B-703.3.1
BRAILLE DIMENSIONS

CROSS SECTION VISUAL/TACTILE CHARACTERS TACTILE LETTER SPACING



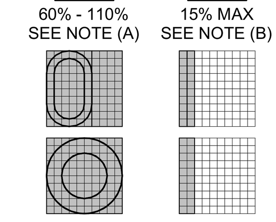
CHARACTER SPACING

NOTE:

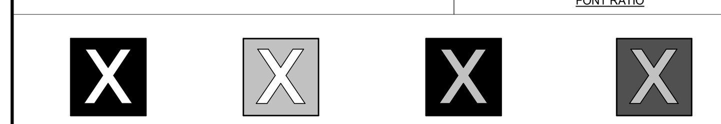
(A) "O" IS 60 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF THE UPPERCASE "T"

(B) STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15 PERCENT MAXIMUM OF THE HEIGHT OF THE CHARACTER

WIDTH TO HEIGHT RATIO	STROKE TO HEIGHT RATIO
60% - 110% SEE NOTE (A)	15% MAX SEE NOTE (B)



FONT RATIO



0% WHITE ON 100% BACKGROUND — 0% WHITE ON 70% BACKGROUND — 30% TEXT CONTRAST TO 100% BACKGROUND — 15% TEXT CONTRAST TO 85% BACKGROUND

MINIMUM 70% CONTRAST DIFFERENCE BETWEEN CHARACTERS/GRAPHICS AND BACKGROUND

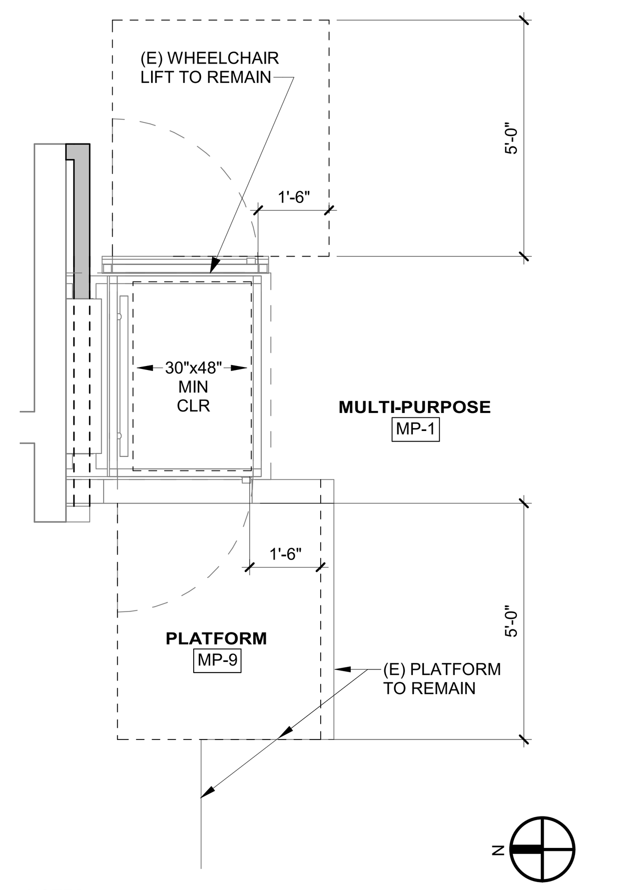
CONTRAST

LINE SPACING PER 11B-703.2.8, TYPICAL

SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF RAISED CHARACTERS WITHIN A MESSAGE SHALL BE 135 PERCENT MINIMUM AND 170 PERCENT MAXIMUM OF THE RAISED CHARACTER HEIGHT.

SIGNAGE DESIGN REQUIREMENTS — 1 1/2" = 1'-0" — 4

(E) WHEELCHAIR LIFT — 3/8" = 1'-0" — 18

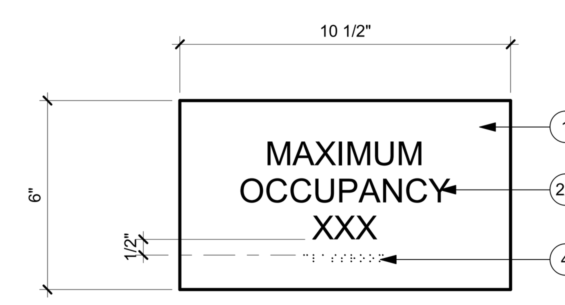


NOTES:

1. FOR ADDITIONAL LIFT NOTES, SEE 25 / A10.3
2. THE CLEARANCE BETWEEN THE PLATFORM SILL AND THE EDGE OF ANY RUNWAY LANDING SHALL BE NO GREATER THAN 1-1/4" IN COMPLIANCE WITH 11B-410.4

REF: 10 / A2.1

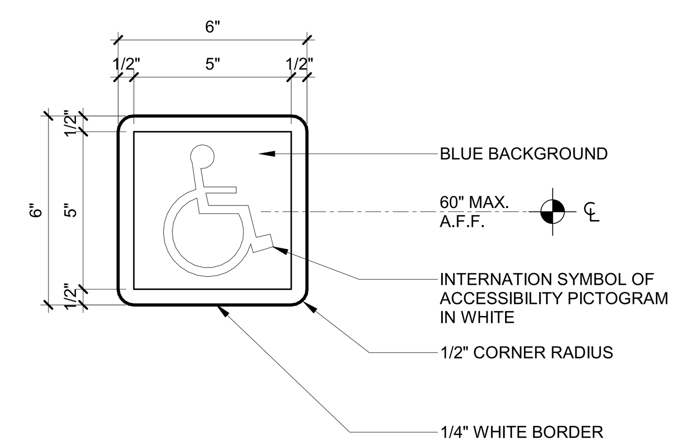
MAXIMUM OCCUPANCY SIGN "S5" — 3" = 1'-0" — 13



NOTES:

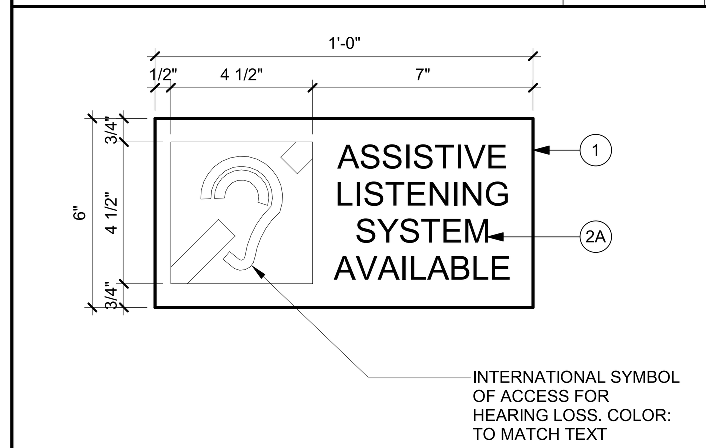
1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6/A10.3
2. FOR TYP DESIGN REQUIREMENTS, SEE 1/A10.3
3. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7/A10.3

ACCESSIBE ENTRANCE SIGN "S1" — 3" = 1'-0" — 9



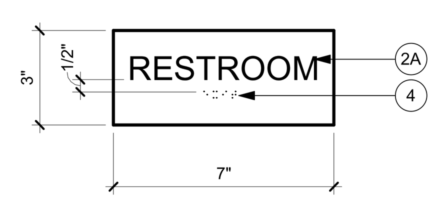
NOTE: FOR SIGNAGE KEYNOTE LEGEND AND SIGNAGE GENERAL NOTES, SEE DETAIL 1/A10.3

ALS SIGN "S8" — 3" = 1'-0" — 19



NOTE: FOR SIGNAGE KEYNOTE LEGEND AND SIGNAGE GENERAL NOTES, SEE DETAIL 1/A10.3

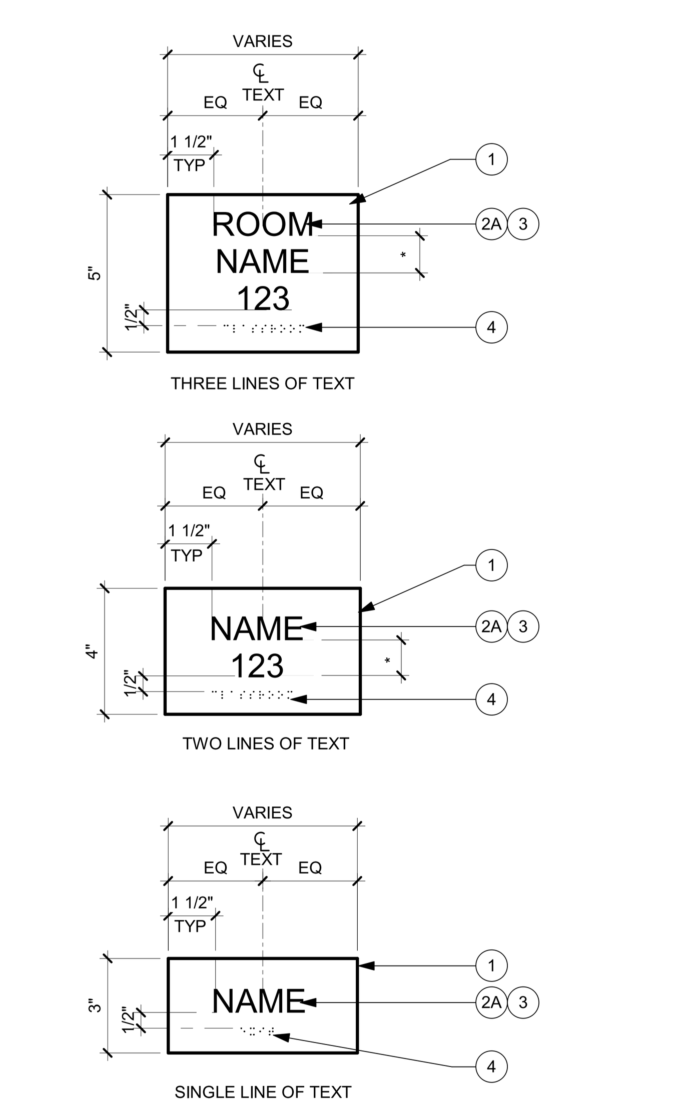
ALL GENDER WALL MTD SIGN "S6" — 3" = 1'-0" — 14



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6/A10.3
2. FOR TYP DESIGN REQUIREMENTS, SEE 1/A10.3
3. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7/A10.3

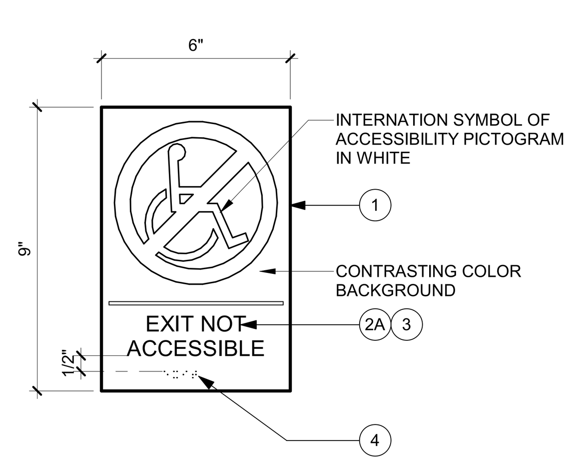
ROOM ID SIGN "S2" — 3" = 1'-0" — 10



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6/A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5/A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 1/A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7/A10.3
5. * FOR LINE SPACING REQUIREMENTS, SEE 4/A10.3

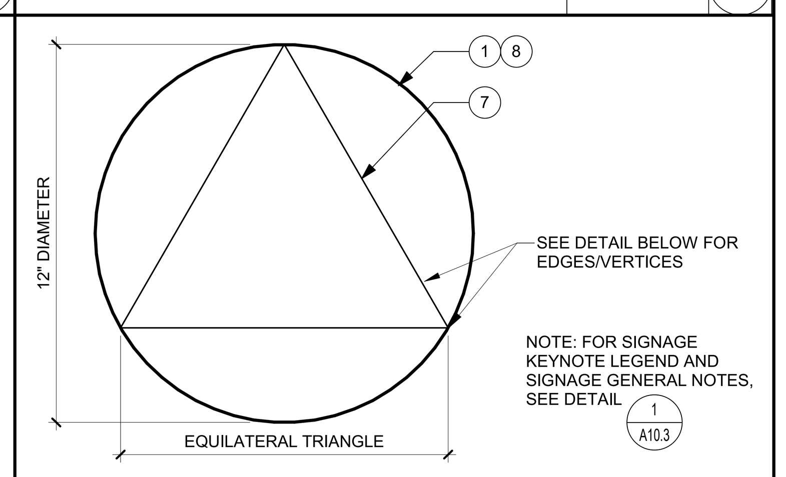
EXIT NOT ACCESSIBLE SIGN "S9" — 3" = 1'-0" — 20



NOTES:

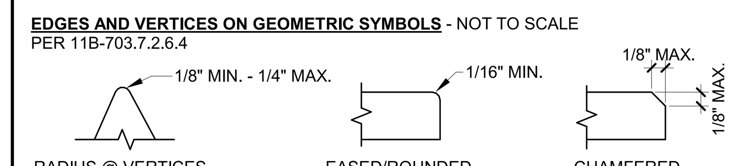
1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6/A10.3
2. FOR TYP DESIGN REQUIREMENTS, SEE 1/A10.3
3. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7/A10.3

ALL GENDER RR DOOR SIGN "S7" — 3" = 1'-0" — 15

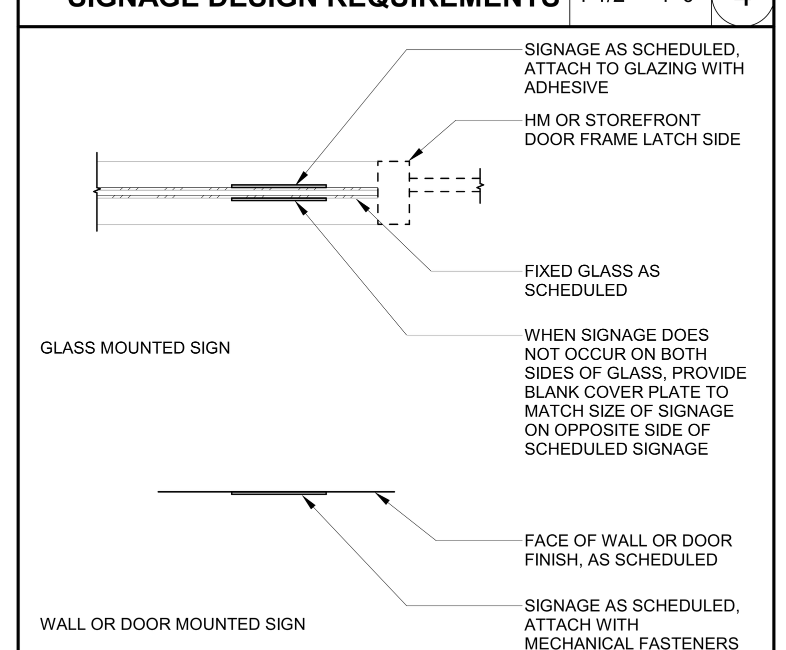


NOTE: FOR SIGNAGE KEYNOTE LEGEND AND SIGNAGE GENERAL NOTES, SEE DETAIL 1/A10.3

EDGES AND VERTICES ON GEOMETRIC SYMBOLS - NOT TO SCALE
PER 11B-703.7.2.6.4



SIGNAGE MOUNTING TYPES — 1" = 1'-0" — 5



(E) WHEELCHAIR LIFT NOTES — 1" = 1'-0" — 25

1. LIFTS, SERVING AS AN ACCESSIBLE MEANS OF EGRESS, SHALL BE PROVIDED WITH STANDBY POWER OR WITH SELF-RECHARGEABLE BATTERY POWER THAT PROVIDES SUFFICIENT POWER TO OPERATE ALL PLATFORM LIFT FUNCTIONS FOR A MINIMUM OF 5 UPWARD AND DOWNWARD TRIPS, CBC 11B-207.2.
2. LIFTS SHALL NOT BE ATTENDANT-OPERATED AND SHALL PROVIDE UNASSISTED ENTRY AND EXIT FROM THE LIFT.
3. CONTROLS FOR LIFTS SHALL COMPLY WITH CBC 11B-309
   - 3.1. OPERATION OF LIFTS FROM THE LANDINGS AND FROM THE PLATFORMS SHALL BE CONTROLLED BY CONTROL SWITCHES AT ALL STATIONS, AND SHALL BE BY MEANS OF CONTINUOUS-PRESSURE TYPE.
   - 3.2. CONTROLS SHALL BE 48" MAX AND 15" MIN ABOVE THE PLATFORM OR FACILITY FLOOR OR GROUND LEVEL.
   - 3.3. OPERATING DEVICES SHALL BE DESIGNED SO THAT BOTH THE "UP" AND "DOWN" CIRCUITS CANNOT BE OPERATED AT THE SAME TIME, ASME 18.1 SECTION 2.10.1
4. A RESTRICTION SIGN COMPLYING WITH CBC 11B-703.5 AND ASME A18.1 SECTION 2.7.4 SHALL BE SECURELY FASTNED/POSTED IN A CONSPICUOUS PLACE AT EAC LANDING AND WITHIN THE PLATFORM ENCLOSURE STATING "NO FREIGHT" AND SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY COMPLYING W/ CBC 11B-703.7.2.1. THE LETTERS USED SHALL BE 5/8" HIGH MIN.
5. LIFTS WITHOUT A RUNWAY ENCLOSURE SHALL COMPLY WITH THE REQUIREMENTS OF ASME A18.1 SECTION 2.1.3 WHICH INCLUDE BUT ARE NOT LIMITED TO, THE FOLLOWING:
   - 5.1. TRAVEL OF LIFTS SHALL NOT EXCEED 5 FEET PER ASME A18.1 SECTION 2.7.1.
   - 5.2. THE RUNWAY ENTRANCE AT THE UPPER LANDING SHALL BE GUARDED BY AN UN-PERFORATED, SELF CLOSING DOOR AT EAST 42" HIGH, NOT WIDER THAN THE ENTRANCE TO THE PLATFORM PLUS 1".
     - 5.2.1. THE LIFT SIDE OF THE DOOR AND SILL SHALL PRESENT A SMOOTH SURFACE.
     - 5.2.2. THE DOOR SHALL BE LOCATED NOT MORE THAN 3" FROM THE PLATFORM SILL.
   - 5.3. THE LOWER LANDING SIDE OF THE PLATFORM SHALL BE GUARDED AS FOLLOWS:
     - 5.3.1. BY AN UN-PERFORATED, SELF CLOSING PLATFORM DOOR OF AT LEAST 42" HIGH IN CONFORMANCE W/ ASME A18.1 SECTION 2.1.3.4.2
   - 5.4. THE SIDES OF PLATFORM NOT USED FOR ENTRANCE OR EXIT SHALL BE GUARDED BY WALLS OF SMOOTH CONSTRUCTION WITH NO OPENINGS, OTHER THAN THOSE NECESSARY FOR OPERATION OF THE LIFT, TO A HEIGHT OF AT LEAST 42". OPENINGS NECESSARY FOR OPERATION SHALL REJECT A BALL 1/2" IN DIAMETER.
     - 5.4.1. A GRAB BAR OR RAIL EXTENDING THE FILL LENGTH OF EITHER SIDE WALL OF PLATFORMS SHALL BE PROVIDED AT A HEIGHT OF 34" TO 38"
     - 5.4.2. THE RUNNING CLEARANCE BETWEEN THE PLATFORM ENCLOSURE WALLS AND THE MACHINE HOUSING OR ANY OTHER RIGID SURFACE SHALL BE 2" MINIMUM.
     - 5.4.3. WHERE AN OBSTRUCTION OR SURFACE LESS THAN 42" ABOVE THE TOP LANDING OTHER THAN THE MACHINE HOUSING IS WITHIN 12" OF THE PLATFORM ENCLOSURE WALLS, A SMOOTH CONTINUOUS SURFACE SHALL BE PROVIDED EXTENDING FROM THE LOWER LANDING TO A HEIGHT OF 42" MINIMUM ABOVE THE TOP LANDING.
     - 5.4.4. WHERE AN OBSTRUCTION OF SURFACE IS BETWEEN 42" AND 80" ABOVE THE TOP LANDING, A SMOOTH CONTINUOUS SURFACE SHALL BE PROVIDED EXTENDING FROM THE LOWER LANDING TO A HEIGHT OF 3" MINIMUM ABOVE THE OBSTRUCTION.
   - 5.5. THE UNDERSIDE OF THE PLATFORM SHALL BE GUARDED IN ACCORDANCE WITH THE REQUIREMENTS OF ASME 18.1 SECTION 2.1.3.6.
   - 5.6. THE CLEARANCE BETWEEN THE PLATFORM FLOOR AND THE UPPER LANDING SILL SHALL BE 3/8" MIN. TO 3/4" MAX, ASME A18.1 SECTION 2.1.3.7
   - 5.7. ALL DOORS SHALL BE PROVIDED WITH A COMBINATION MECHANICAL LOCK AND ELECTRIC CONTACT. ASME A18.1 SECTION 2.1.3.8
6. VERTICAL WHEELCHAIR LIFTS SHALL HAVE A MANUAL LOWERING DEVICE. THE LOWERING DEVICE IS FOR USE BY OTHERS TO LOWER THE LIFT TO THE LOWER LANDING SHOULD THE LIFT DOWNWARD MOTION BECOME IMPAIRED. THE LOWERING DEVICE SHALL COMPLY WITH THE FOLLOWING PER CCR, TITLE 8, SECTION 3094.2(g)
   - 6.1. THE DEVICE SHALL BE SECURED AGAINST UNAUTHORIZED USE.
   - 6.2. THE DEVICE SHALL BE OPERABLE OR ACCESSIBLE FROM OUTSIDE THE ENCLOSURE.
7. THE CLEAR INSIDE UNOBSTRUCTED PLATFORM DIMENSIONS FOR A STRAIGHT THROUGH ACCESS SHALL BE 32" X 54" MIN, CCR, TITLE 8, SECTION 3093.46(b)
8. PER CBC SECTION 410.1, LIFTS SHALL NOT BE ATTENDANT-OPERATED AND SHALL PROVIDE UNASSISTED ENTRY AND EXIT FROM THE LIFT.
9. PER CBC SECTION 410.2, FLOOR SURFACES IN THE LIFT SHALL COMPLY WITH CBC SECTIONS 11B-302 AND 11B-303.
10. PER CBC SECTION 410.3, CLEAR FLOOR SPACE IN LIFTS SHALL COMPLY WITH CBC SECTION 11B-305.
11. PER CBC SECTION 410.4, THE CLEARANCE BETWEEN THE PLATFORM SILL AND THE EDGE OF ANY RUNWAY LANDING SHALL BE 1-1/4" MAXIMUM.
12. PER CBC SECTION 410.5, CONTROLS FOR LIFTS SHALL COMPLY WITH CBC SECTION 11B-309;
    - A 30"x48" CLEAR FLOOR OR GROUND SPACE SHALL BE PROVIDED.
    - CONTROLS SHALL BE WITHIN ACCESSIBLE REACH RANGES AS DEFINED IN CBC SECTION 11B-308.
    - CONTROLS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS MAXIMUM.
13. PER CBC SECTION 410.6, LIFTS SHALL HAVE A LOW-ENERGY POWER-OPERATED DOORS OR GATES COMPLYING WITH CBC SECTION 11B-404.3. DOOR SHALL REMAIN OPEN FOR 20 SECONDS MINIMUM. END DOORS AND GATES SHALL PROVIDE A CLEAR WIDTH 32" MINIMUM. SIDE DOORS AND GATES SHALL PROVIDE A CLEAR WIDTH 42" MINIMUM. EXCEPTION: LIFTS SERVING TWO LANDINGS MAXIMUM AND HAVING DOORS OR GATES ON OPPOSITE SIDES SHALL BE PERMITTED TO HAVE SELF-CLOSING MANUAL DOORS OR GATES. (MANUAL DOORS AND GATES SHALL PROVIDE PULL-SIDE LEVEL MANUEVERING CLEARANCES IN CONFORMANCE WITH CBC SECTION 404.2.4.)
14. PER CBC SECTION 410.7, THE MINIMUM SIZE OF LANDINGS AT LIFTS SHALL BE 60" x 60".

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IDENTIFICATION STAMP
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DATE: 10/27/2021

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ARCHITECT	ENGINEER
LICENSED ARCHITECT, BRIAN P WHITMORE, No. C 30345, Ren.: 9/30/23, STATE OF CALIFORNIA. DATE SIGNED: 10/15/2021	

GENERAL NOTES

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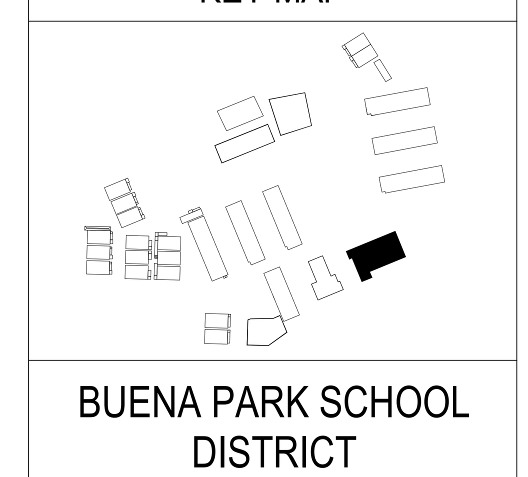
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY MAP



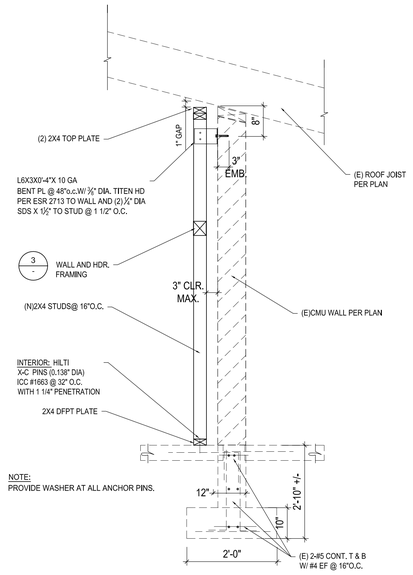
BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

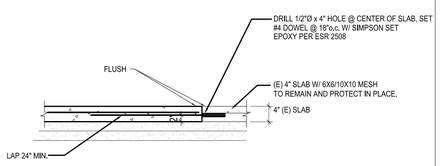
ARTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER ST.
BUENA PARK, CA 90620

DETAILS

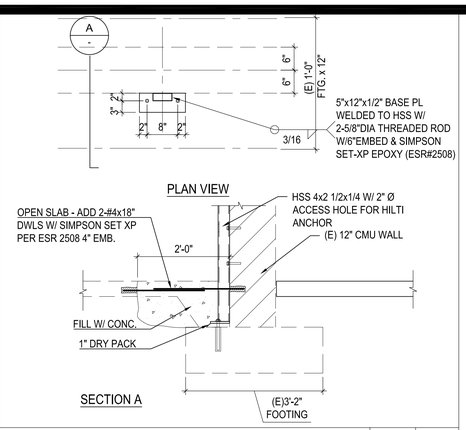
Date	Project Number
10/19/2021	21008
Scale: As indicated	Drawing Number
Drawn: Author / Checked: Checker	A10.3



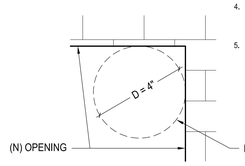
(N) INTERIOR FURRING WALL | 3/4" | 4



(N)SLAB TO (E)SLAB | 3/4" | 5



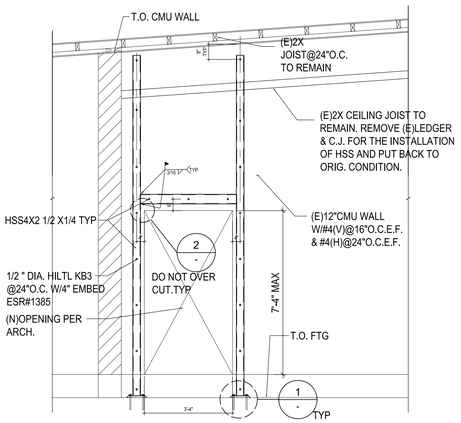
DETAIL | 3/4" | 1



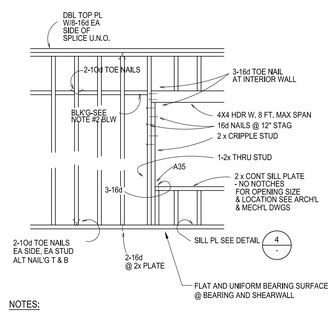
SAWCUT INSTRUCTIONS

1. CORE 4" DIA HOLES AT NEW OPENING CORNERS.
2. SAWCUT BETWEEN CORE HOLES. DO NOT OVERCUT AT CORNERS.
3. WHERE REQUIRED, CHIP OUT REMAINING CONRETE TO THE CORNERS WITH SMALL TOOLS.
4. WHERE SAWCUT SURFACES WILL BE CONCEALED, COAT ENDS OF REBAR WITH CORROSION RESISTANT PAINT, RUSTOLEUM OR EQUAL.
5. WHERE SAWCUT SURFACES ARE EXPOSED, BURN OFF ENDS OF REBAR 1" BELOW SURFACE AND PATCH AS FOR FORM TIES.

SAWCUT @ (E) CMU WALL | 3/4" | 2



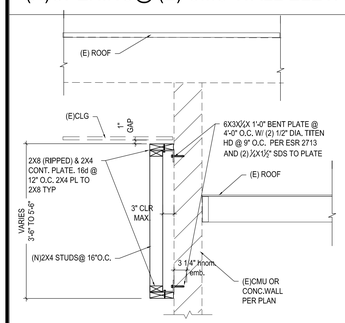
(N)OPENING@ (E) CMU WALL ELEVATION | 3/4" | 6



NOTES:

1. BLOCKING REQ'D AT CEILING LINE & 8'-0" o.c. MAX SPACING. 2 x STUD WIDTH SOLID BLOCKING REQ'D. SEE SHEAR WALL DETAILS & SECTIONS FOR ADDITIONAL BLOCKING REQ'D.

NON-BREARING STUD WALL FRAMING ELEVATION | 3/4" | 3



(N)FURRING @ (E) CMU OR CONC. WALL | 3/4" | 8

EXPANSION OR EPOXY - TYPE ANCHORS

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2019 CBC 1910A.5
2. INSTALLATION SHALL BE CONTINUOUSLY INSPECTED IN ACCORDANCE WITH ICC EVALUATION .
3. LOAD TEST FOR VALUES SHOWN U.N.O. ARE IN ACCORDANCE WITH CBC, SECTION 1910A.5.4
4. ALL EXPANSION BOLTS TO BE USED SHALL BE HILTI KB-TZ2 ANCHORS TYP PER ICC ESR-4266. ALL EPOXY BOLTS SHALL BE SIMPSON SET- 3G PER ICC ESR-4057. NO SUBSTITUTION SHALL BE MADE WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.

   HILTI KB TZ BOLT TESTING TABLE. FOR EPOXY BOLTS SEE SPECIFIC DETAIL FOR EMBEDMENT AND DIRECT PULL TESTING LOAD.

BOLT DIA.	MINIMUM DEPTH OF EMBEDMENT	REQUIRED INSTALLATION TORQUE FOR EXPANSION BOLT
3/8"	2"	25 FT-LBS
1/2"	3 1/4"	40 FT- LBS
5/8"	4"	60 FT- LBS
3/4"	4 3/4"	110 FT- LBS

TABLE NOTES:

A. TABULATED VALUES ARE BASED ONTHE ICC ESR REPORT #1917 AND SHALL BE INSTALLED WITH SPECIAL INSPECTION. THE TABULATED VALUES ARE FOR ANCHORS INSTALLED A MINIMUM OF 12 DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 12 DIAMETERS. SEE CBC 1910A.5.5 FOR ACCEPTANCE AND FAILURE CRITERIA.

B. WHEN THE EXPANSION-TYPE ANCHORS ARE TO BE USED FOR SILL PLATE BOLTING APPLICATIONS, 10% OF THE ANCHORS SHALL BE TENSION TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR OTHER STRUCTURAL APPLICATIONS, ALL SUCH EXPANSION ANCHORS SHALL BE TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR NONSTRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE, 50% OR ALTERNATE BOLTS IN A GROUP SHALL BE TENSION TESTED.

C. THE TESTING OF THE EXPANSION AND EPOXY ANCHORS SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO DSA ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, DSA ENFORCEMENT AGENCY SHALL DETERMINE IF THE PROPOSED ADDITIONAL TESTING REQUIREMENTS ARE ACCEPTABLE.

POWDER DRIVEN SHOT PINS (LOW VELOCITY)

1. SHOT PINS MAY BE USED FOR SHEAR LOADS AND THEY MAY BE USED IN TENSION TO SUPPORT LOADS LESS THAN 90 POUNDS FOR MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT, ETC. ANY SHOT ANCHORS MUST HAVE ICBO APPROVAL FOR USE ON CONCRETE CURBS.
2. THE ALLOWABLE LOADS SHALL BE 90 POUNDS OR 80 % OF ESR APPROVED VALUES, WHICHEVER IS LESS. QUALIFICATIONS FOR USE OF ALL POWER ACTUATED TOOLS MUST MEET ANSI A10.3 STANDARD AS REQUIRED BY THE MANUFACTURER AND ALL OSHA REQUIREMENTS.
3. TESTING - THE OPERATOR, TOOL AND FASTENER SHALL BE PRE - QUALIFIED BY THE PROJECT INSPECTOR. THE INSPECTOR SHALL OBSERVE THE TESTING OF THE FIRST 1- FASTENER INSTALLATIONS. A TEST "PULL - OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS. IF ANY PIN FAILS TESTING, TEST ALL PINS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL (20) CONSECUTIVE PASS, THEN RESUME THE INITIAL TESTING FREQUENCY.
4. SHOT PINS SHALL BE HILTI. X - U (ESR 2269) AND CAN BE USED TO CONNECT METAL STUD TRACK OR WOOD SILL TO
   - CONCRETE — X - U 0.157 SHANK DIA. W/ 1-1/2" MIN.\ PENETRATION

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A6 AND SHALL BE FABRICATED ACCORDING TO AISC PRACTICE AND SPECIFICATION FOR BUILDING.
2. MATERIALS: PROVIDE STRUCTURAL STEEL COMPLYING WITH UBC STANDARD AND ASTM STANDARD AS FOLLOWS, U.N.O.
   - A. ALL WIDE FLANGES — ASTM A992, GRADE 50
   - B. TUBES (HSS ROUNDS, HSS TUBES) — ASTM A500, GRADE B (46ksi @ HSS RECT, GRADE B (42 ksi @ ROUND HSS)
   - C. PIPES — ASTM A53, GRADE B (35ksi)
   - D. CHANNELS, ANGLES, PLATES — ASTM A36 (U.O.N.)
   - E. ANCHOR BOLTS — ASTM F1554 (36 KSI, U.N.O.)
   - F. THREADED ROD — ASTM A36
3. BOLTS
   - A. UUSE ASTM A307 BOLTS, NUTS AND WASHERS UNLESS NOTED OTHERWISE.
   - B. STANDARD BOLT HOLE SHALL BE 1/16" LARGER IN DIAMETER THAN NORMAL BOLT DIAMETER, U.N.O.
   - C. OVERSIZE BOLTS HOLES FOR ANCHOR BOLTS IN BASE PLATE MAY BE ALLOWED BY PROVIDING 3-1/2" SQUARE PLATE WASHERS UNDER NUT U.N.O. THICKNESS OF PLATE WASHER SHALL BE 0.5 TIMES THE DIAMETER OF ANCHOR BOLTS U.N.O. USE 5/16 INCH FILLET WELD AROUND PLATE WASHER U.N.O.
4. WELDING
   - A. ALL WELDS SHALL BE DONE USING THE SHIELDED ELECTRIC ARC PROCESS BY AWS CERTIFIED WELDERS USING AWS D1.1 LOW - HYDROGEN E70XX ELECTRODES.
   - B. ALL WELDS USED IN PRIMARY MEMBERS AND CONNECTIONS IN THE LATERAL FORCE SYSTEMS SHALL BE MADE WITH A FILLER MATERIAL THAT HAS A MINIMUM CHARPY V - NOTCH TOUGHNESS OF 20FT-LBS AT MINUS 20 DEGREES F. AS DETERMINED BY AWS CLASSIFICATION.
   - C. CONTINUOUS INSPECTION IS REQUIRED FOR ALL FIELD AND SHOP WELDING BY AN INSPECTOR APPROVED BY GOVERNING CODE - AUTHORITY (DSA FOR PUBLIC SCHOOLS)
   - D. WELDERS SHALL BE QUALIFIED AND CERTIFIED BY THE GOVERNING CODE AUTHORITY. (DSA FOR PUBLIC SCHOOLS)
5. STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED U.N.O. (SEE ARCHITECTURAL DRAWINGS FOR OTHER CONDITION)
6. STRUCTURAL STEEL SHOP DRAWINGS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION.

WOOD

1. ALL WOOD MEMBERS SHALL BE DOUGLAS FIR LARCH #1 GRADE, EXCEPT BLOCKING MAY BE #2 GRADE, CONFORMING TO THE WCLIB GRADING RULES #16, OR AS SPECIFICALLY CALLED FOR ON THE DRAWINGS. EACH PIECE OF LUMBER SHALL BE GRADE MARKED. ALL MEMBERS TO HAVE MOISTURE CONTENT LESS THAN 19% AT TIME OF INSTALLATION.
2. ALL LUMBER WHICH COMES IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE DOUGLAS FIR NO. 2 OR BETTER, PRESSURE TREATED AND BEAR THE MARK INDICATING CONFORMANCE WITH THE REQUIREMENTS OF AWPA STANDARD U1 AND T1. THE LUMBER SHALL BE PRESSURE TREATED WITH THE CHEMICAL ACZA, BORATE OR EQUAL. WHERE SILLS ARE CUT, DRILLED OR NOTCHED THEY SHALL BE TREATED WITH A PRESERVATIVE THAT MEETS THE AWPA STANDARD U1 AND APPROVED BY THE ARCHITECT AND THE ENFORCEMENT AGENCY. ON ALL EXPOSED SURFACES FROM WHICH THE PRESERVATIVE TREATMENT HAS BEEN REMOVED. SILLS AT SHEAR WALLS AND BEARING WALLS SHALL BE FLAT AND UNIFORM ON CONCRETE SURFACE SO AS TO OBTAIN CONTINUOUS BEARING.
3. ALL PLYWOOD SHALL BE MANUFACTURED USING EXTERIOR GLUE AND SHALL CONFORM TO U.S. PRODUCT STANDARD PS-1, SECTION 7. PANELS SHALL CONFORM TO THE GRADES SPECIFIED ON THE DRAWINGS. PANELS EXPOSED TO WEATHER SHALL BE EXTERIOR GRADE. EACH PANEL SHALL BEAR MARKINGS IDENTIFYING THE QUALIFIED TESTING AND INSPECTION AGENCY, GRADE, NOMINAL THICKNESS, SPAN RATING, EXPOSURE DURABILITY CLASSIFICATION AND STANDARD TO WHICH IT IS CERTIFIED.
4. USE OF MACHINE NAILING IS SUBJECT TO A SATISFACTORY JOB SITE DEMONSTRATION FOR EACH PROJECT AND THE APPROVAL OF THE PROJECT ARCHITECT OR STRUCTURAL ENGINEER AND THE ENFORCEMENT AGENCY. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING IS NOT ALLOWED FOR 5/16 INCH PLYWOOD. IF THE NAIL HEADS PENETRATE THE OUTER PLY MORE THAN WOULD BE NORMAL FOR A HAND HELD HAMMER, OR IF MINIMUM ALLOWABLE EDGE DISTANCES ARE NOTE MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY AND MACHINE NAILING SHALL BE DISCONTINUED.
5. ALL BOLTED CONNECTIONS ARE TO BE RETIGHTENED PRIOR TO CLOSING IN.
6. NAILING SHALL BE WITH COMMON NAILS AND SHALL CONFORM TO THE CBC NAILING SCHEDULE TABLE 2304.10.1
7. SHEET METAL HANGERS, TIES, BRIDGING ANCHORS, ETC. SHALL BE BY THE SIMPSON COMPANY OR APPROVED EQUAL.
8. BLOCKING AND BRIDGING TO BE PROVIDED PER CBC 2308.4.6
9. FOR 10d NAILS AT PLYWOOD SHEAR WALLS AND ROOF DIAPHRAGMS, PROVIDE 1 1/2" MINIMUM PENETRATION INTO FRAMING PER AWS SDPWS (FORMERLY ANSI7AF & PA SDPWS) TABLES.

GENERAL

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE 2019 CALIFORNIA BUILDING CODE AND ALL LOCAL CODES.
2. STRUCTURAL DRAWINGS ARE PARTS OF CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND COORDINATE WITH ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS, AND SHALL NOTIFY THE ARCHITECT AND ENGINEERS OF ANY DISCREPANCIES.
3. STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR SHALL PROVIDE MEANS AND METHODS AS REQUIRED. PROVIDE ADEQUATE BRACING, SHORING, TEMPORARY STRUCTURES AND PARTIALLY COMPLETED PORTIONS OF WORKS COMPLYING WITH NATIONAL, STATE AND ALL LOCAL SAFETY ORDINANCES.
4. TYPICAL DETAILS AND SCHEDULES MAY NOT BE REFERENCED ON DRAWINGS. CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH ALL TYPICAL DETAILS AND SCHEDULES PRIOR TO PROCEED WITH WORK.
5. CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM ALL DAMAGE.
6. THE CONTRACTOR SHALL NOT DEVIATE FROM THE TENDERED DOCUMENTS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND ENGINEERS.
7. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. FOR ALL LOCATIONS OF DATUM ELEVATION 0.0; REFER TO ARCHITECTURAL AND SITE DRAWINGS. ALL ELEVATIONS INDICATED ON THE STRUCTURAL DRAWINGS ARE MEASURED WITH RESPECT TO THIS DATUM, UNLESS NOTED OTHERWISE.

DESIGN LOADS

1. WIND DESIGN LOADS
   - BASIC WIND SPEED.....105MPH
   - EXPOSURE..... C
   - INTERNAL PRESSURE COEFFICIENT..... ± 0.18
   - COMPONENT AND CLADDING..... -25 PSF (OUTWARD) +23 PSF (INWARD)
2. SEISMIC DESIGN LOADS
   - OCCUPANCY CATEGORY.....III
   - SITE CLASS.....D (DEFAULT)
   - SEISMIC DESIGN CATEGORY.....D
   - IMPORTANCE FACTOR.....1.0
   - S_s = 1.505 Fa=1.2
   - S_1 = 0.533 Fv=1.85
   - S_{DS} = 1.204
   - S_{D1} = 0.657 LATITUDE = 33.85557; LONGITUDE = -118.02128

BLDG: ALL — ANALYSIS PROCEDURE: STATIC

BLDG	DIRECTION	SEISMIC FORCE RESISTING SYSTEM	R	RHO	Cd	OMEGA	Cs
EXISTING MPR BUILDING	BOTH	SRMSW	5	1.0	3.5	2.5	0.301 (LRFD)

"SRMSW" - SPECIAL REINFORCED MASONRY SHEAR WALL

3. ROOF LIVE LOAD = 20PSF

REINFORCED CONCRETE (CAST-IN-PLACE)

1. STRUCTURAL CONCRETE AND CONCRETE PRACTICES SHALL CONFORM TO ACI 318 CURRENT EDITION AS WELL AS ALL APPLICABLE CODES STATED IN GENERAL NOTE.
2. ALL CONCRETE DETAILS SHALL BE IN ACCORDANCE WITH ACI-135 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", UNLESS NOTED OTHERWISE.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS. ALL CONCRETE NORMAL WEIGHT U.N.O.

	STRENGTH (PSI)	CEMENT TYPE	W/C	WT	MAX-AGG:
SLAB ON GRADE	3000	II	0.5	145	1"

4. ALL CONCRETE SHALL HAVE A MAXIMUM SLUMP NO GREATER THAN 4" EXCEPT FOR FOUNDATIONS WHICH MAY HAVE 5" MAX SLUMP.
5. MIX DESIGNS SHALL BE APPROVED BY STRUCTURAL ENGINEER PRIOR TO USE.
6. PROPOSED CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.

REINFORCING STEEL

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 40 FOR#3 AND SMALL AND GRADE 60 FOR #4 AND LARGER. REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706, GRADE 60. ALL REBAR AND ACCESSORIES SHALL BE PURPLE BONDED FUSION EPOXY (FBE) ASTM A934. ANY DAMAGE TO COATING SHALL BE REPAIRED IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.
2. WELDED WIRE FABRIC (WWF) SHALL COMPLY WITH ASTM 185, AND SHALL BE LAPPED 1-1/2 SPACES (12"MM).
3. ALL REINFORCING STEEL, DOWELS, ANCHOR BOLTS, ETC. SHALL BE WELL SECURED IN PLACE PRIOR TO PLACING CONCRETE.
4. ALL REINFORCING STEEL SHALL BE LAPPED AS SPECIFIED ON THE DETAIL. WHERE NOT SPECIFICALLY INDICATED ON THE DRAWING, ALL REINFORCING STEEL SHALL BE LAPPED USING THE TENSION SPLICE LENGTHS IN THE SCHEDULE ON DRAWING UNLESS NOTED OTHERWISE, TERMINATED CONTINUOUS BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.
5. DOWELS SHALL BE PROVIDED AT POUR AND CONSTRUCTION JOINTS AND SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCING SHOWN FOR THE SUBSEQUENT CONSTRUCTION.
6. REINFORCING STEEL SHALL HAVE THE FOLLOWING MINIMUM COVERS, U.N.O.
   - CONCRETE AGAINST EARTH (NOT FORMED) — 3"
   - CONCRETE AGAINST EARTH (FORMED AND TROWELED) — 2"
   - WALL AND CURB — 1-1/2"
   - SLAB ON GRADE — CENTER
7. WELDING OR REINFORCING STEEL SHALL COMPLY WITH AWS D1.4. ALL BARS TO BE WELDED SHALL CONFORM TO ASTM A706, GRADE 60.
8. SUBMIT REINFORCING STEEL SHOP DRAWING TO ARCHITECT FOR APPROVAL.

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APP: 04-120369 INC:
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DATE: 10/27/2021

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER — Exp. 6-30-22 — STATE OF CALIFORNIA — DATE SIGNED: 10/19/2021

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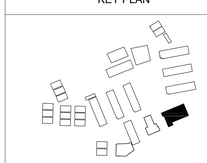
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



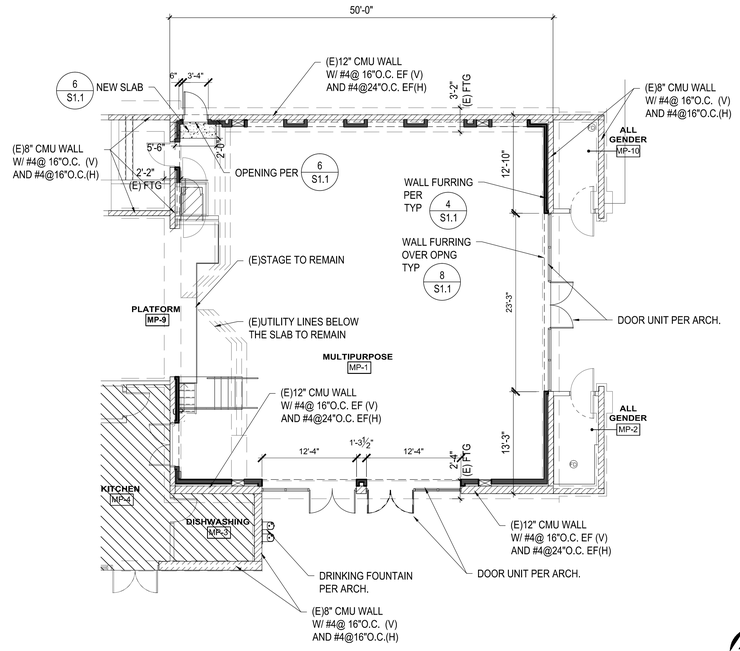
BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

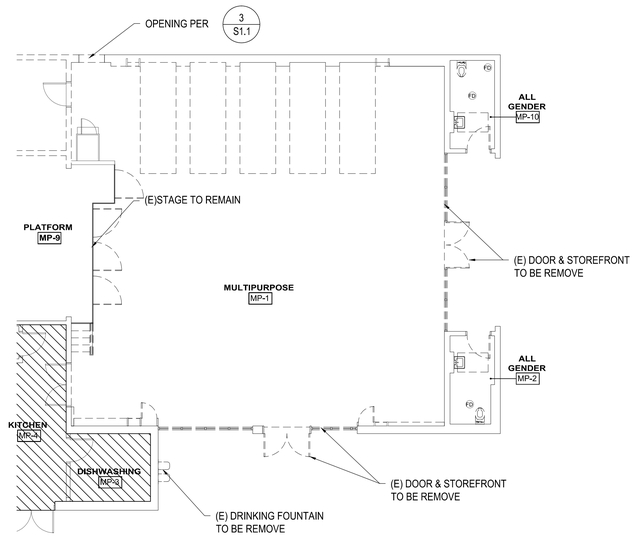
AURTHUR F COREY ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

GENERAL NOTES AND STRUCTURAL DETAILS

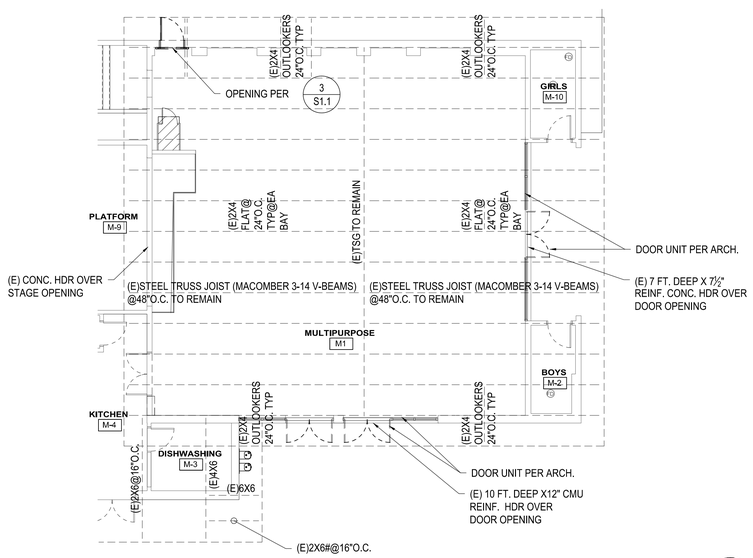
Date	Project Number
10/19/2021	21008
Scale	**Drawing Number**
AS NOTED	S1.1
Drawn	**Checked**
MR	SW



MPR FOUNDATION PLAN | 1/8" = 1'-0" | 3



MPR DEMO FLOOR PLAN | 1/8" = 1'-0" | 1



MPR ROOF FRAMING PLAN | 1/8" = 1'-0" | 3

KEYNOTES

NUMBER	NOTE

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DATE SIGNED: 10/15/2021

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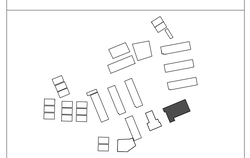
KEY PLAN



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DSA BACKCHECK

AURTHUR F COREY
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MULTI-PURPOSE ROOM
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DEMOLITION /
(E)FOUNDATION AND
(E)FRAMING PLANS

Date	Project Number
10/19/2021	21008
Scale	Drawing Number
AS NOTED	S2.1
Drawn / Checked	
MR / SW	

FIXTURE SCHEDULE

ITEM	FIXTURE	ROUGH-IN CONNECTIONS						DESCRIPTION
		TRAP	WASTE	VENT	HOT WATER	COLD WATER	GAS	
WC 1	WATER CLOSET (ACCESSIBLE)	INT	4"	2"	--	1"	--	AMERICAN STANDARD (A/S) NO. 3461.001 "MADERA FLOWISE 16-1/2" HEIGHT ELONGATED FLUSHOMETER TOILET", SIPHON JET, FLOOR MOUNTED, ELONGATED BOWL, 16-1/2" HIGH. COMPLETE WITH SLOAN ROYAL NO. 111-1.28 GPF FLUSH VALVE, OLSONITE NO. 95SSCT SEAT AND A/S BOLT CAPS.
L 1	LAVATORY (ACCESSIBLE, CW ONLY)	1-1/4"	2"	1-1/2"	--	1/2"	--	AMERICAN STANDARD (A/S) NO. 0355.012 "LUCERNE WALL HUNG LAVATORY", 20" X 18", WALL HUNG. COMPLETE WITH CHICAGO NO. 3400-E39VPABCP METER FAUCET 0.35 GPM NON-AERATING SPRAY, McGUIRE NO. 155A 1-1/4" OUTLET "OPEN GRID P.O. PLUG", McGUIRE NO. PW8090NC0 1-1/4" L.A. PATTERN P-TRAP WITH TRAP AND SUPPLY COVERS, GALVANIZED NIPPLE AND CHROMIUM PLATED BRASS CASING, CHICAGO NO. 1017-ABCP LOOSE KEY STOP WITH RIGID SUPPLY, AND ZURN NO. Z-1231-EZR-WL ADJUSTABLE CONCEALED ARM CARRIER W/ SLEEVE FOR WASTE. MOUNT IN ACCORDANCE WITH ADA REQUIREMENTS.
EWC 1	ELECTRIC WATER COOLER W/BOTTLE FILLER (ACCESSIBLE)	1-1/2"	2"	1-1/2"	--	3/4"	--	ELKAY NO. LZSTL8WSLK, DUAL HEIGHT, SURFACE WALL MOUNTED, LIGHT GRAY GRANITE, BARRIER FREE, 8 GPH OF 50° F. WATER WITH 80° F. INLET WATER AT 90° F. AMBIENT, 1/5 HP, 115 VOLT, 1 PHASE. COMPLETE WITH CHICAGO NO. 45LKABCP ANGLE STOP WITH 1/2" FEMALE INLET & OUTLET. MOUNT AT ADA ACCESSIBLE HEIGHT.
TP 1	TRAP PRIMER (SINGLE DRAIN)	--	--	--	--	1/2"	--	MIFAB NO. MR-500 TRAP PRIMER VALVE, BRASS BODY, ADJUSTABLE, COMPLETE WITH 1/2" COPPER TYPE "L" PIPE TO RECEPTOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS, COMPLETE BEHIND ACCESS PANEL WITH SHUT-OFF VALVE.
WHA 1	WATER HAMMER ARRESTOR	--	--	--	--	--	--	ZURN NO. Z-1700 SERIES "SHOKTROL" WATER HAMMER ARRESTOR COMPLETE BEHIND ACCESS PANEL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. ALL ACCESSIBLE WATER CLOSETS SHALL HAVE FLUSH VALVE WITH HANDLE ON OPEN SIDE.
3. ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON DRAWINGS.
4. ALL PLUMBING FIXTURE VENTS TO TERMINATE A MINIMUM OF 12 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM ANY OUTSIDE AIR INTAKES.
5. EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS.
6. CONNECTION BETWEEN INCOMPATIBLE MATERIALS ABOVE GRADE AND INSIDE BUILDING SHALL BE MADE WITH TWO (2) DIELECTRIC UNIONS SEPARATED BY A TWELVE INCH (12") SECTION OF RED BRASS PIPE.
7. ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. ALL URNINALS SHALL HAVE CLEANOUTS ABOVE FIXTURE, CPC 707.4. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
8. SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBLE FIXTURE LOCATIONS AND MOUNTING HEIGHTS. INSULATE ALL EXPOSED HOT WATER AND DRAIN PIPING BELOW ACCESSIBLE LAVATORIES AND SINKS.
9. ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING.
10. ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA PLUMBING CODE 2019.
11. THESE DRAWINGS INDICATE THE SEWER, WATER, AND STORM DRAIN SYSTEMS TO POINT OF CONNECTION 5'-0" OUTSIDE OF THE BUILDING. CONTINUATION OF THESE SYSTEMS IS SHOWN ON THE CIVIL DRAWINGS AND IS SPECIFIED UNDER ANOTHER SECTION OF THE SPECIFICATIONS. THE PIPING SHALL BE INSTALLED TO MEET THE INVERT ELEVATIONS SHOWN ON THE CIVIL DRAWINGS.
12. INSULATION (SEE SPECIFICATION FOR TYPE REQUIRED) AND COVERING ON PIPE AND TUBING SHALL HAVE A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DENSITY NOT TO EXCEED 450 WHEN TESTED IN ACCORDANCE WITH 2019 C.B.C. SECTION 720.3.
13. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHERE TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. CMC 2019, CHAPTERS 7, 9 ,& 11.
14. ANY ALTERATIONS TO A STRUCTURAL MEMBER, SUCH AS CUTTING, BORING, BRAZING, DRILLING, WELDING, ETC. SHALL HAVE PRIOR WRITTEN APPROVAL OF ARCHITECT, STRUCTURAL ENGINEER AND DSA.
15. M.E.P. COMPONENT ANCHORAGE NOTE:

   ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

   1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRE) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
   3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVER BY DSA.

15. CONT.

   THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REVERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENTS IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

   A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
   B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL

   THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE THE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE THE DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

16. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

   PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCE AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3, AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC SECTIONS 1617A.1.24, 1617A.1.25, AND 1616A.1.26.

   THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. OSHPD OPM FOR 2019 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

   MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

   MP [ ] MD [ ] PP [ ] E [ ] – OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

   MP [ ] MD [ ] PP [X] E [ ] – OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #0043-13.

   –

LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	S OR W	SOIL OR WASTE ABOVE FLOOR
	S OR W	SOIL OR WASTE BELOW FLOOR OR GRADE
	V	SANITARY VENT
	CW	COLD WATER
		DIRECTION OF FLOW
	SOV	SHUT-OFF VALVE
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
		RISER UP
		RISER DOWN
	ABV	ABOVE
	AP	ACCESS PANEL
	BEL	BELOW
	CLG	CEILING
	CONT	CONTINUATION
	COTG	CLEANOUT TO GRADE
	DN	DOWN
	EXIST	EXISTING
	FLR	FLOOR
	POC	POINT OF CONNECTION
	PLCS	PLACES

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DATE: 10/27/2021

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW R. GOSSMAN No. M35839 Exp. 3/31/22 MECHANICAL STATE OF CALIFORNIA DATE SIGNED: 10/15/2021

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NO.	REMARKS	DATE

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	DATE
● DSA PLAN CHECK	08/16/2021
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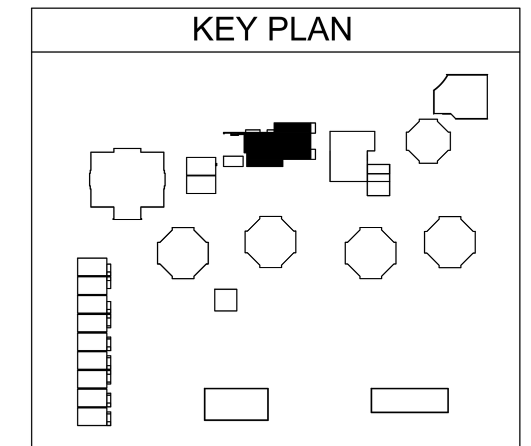
KEY PLAN



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DSA BACKCHECK

COREY ES MP BUILDING MODERNIZATION
7351 HOLDER ST.
BUENA PARK, CA 90620

PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES

Date	Project Number
10/19/2021	21008
Scale: NONE	Drawing Number
Drawn: LD Checked: JS	P0.1

PRINT DATE: 6/10/2021 6:24:52 PM
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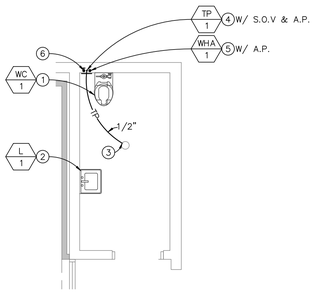
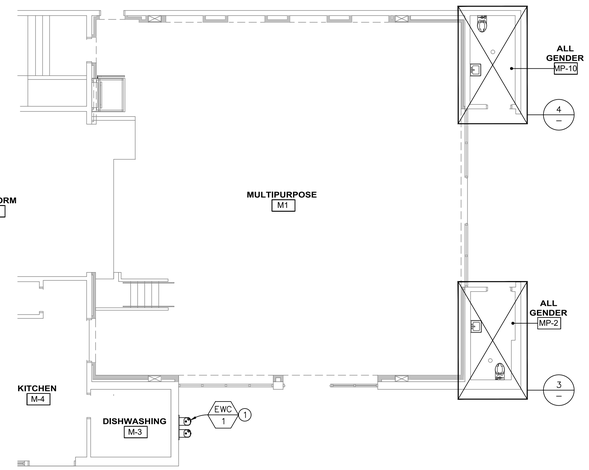


CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER CLOSET.
2. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW LAVATORY.
3. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING FLOOR DRAIN FOR NEW TRAP PRIMER LINE.
4. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW TRAP PRIMER WITH SHUT-OFF VALVE & ACCESS PANEL.
5. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER HAMMER ARRESTOR WITH SHUT-OFF VALVE & ACCESS PANEL.
6. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW SHUT-OFF VALVE & ACCESS PANEL.

PLUMBING ENLARGED FLOOR PLAN 4

SCALE 1/4"=1'-0"



CONSTRUCTION NOTES:

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.
3. WHERE PLANS INDICATE NEW FIXTURES OR EQUIPMENT CONNECTING TO EXISTING SERVICES, PLUMBING CONTRACTOR SHALL MODIFY AND/OR EXTEND EXISTING PIPING OR ROUGH-INS AS REQUIRED TO SUIT THE NEW FIXTURE.

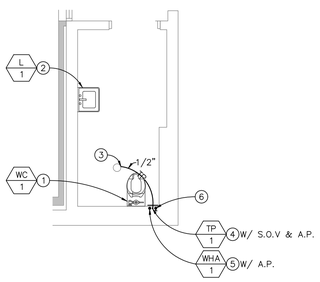
CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW ELECTRIC WATER COOLER.

NORTH

PLUMBING FLOOR PLAN 2

SCALE 1/8"=1'-0"

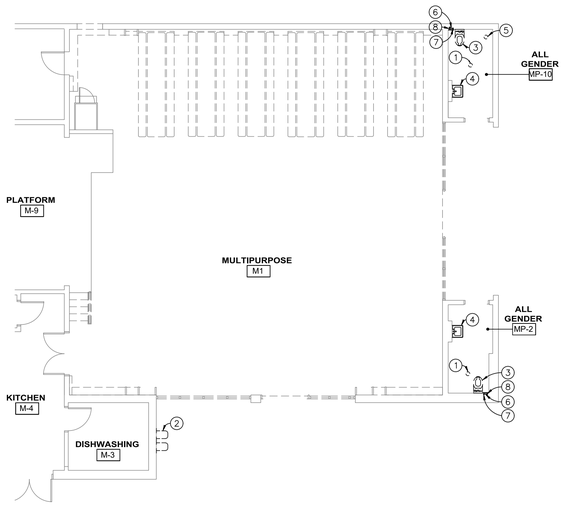


CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER CLOSET.
2. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW LAVATORY.
3. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING FLOOR DRAIN FOR NEW TRAP PRIMER LINE.
4. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW TRAP PRIMER WITH SHUT-OFF VALVE & ACCESS PANEL.
5. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER HAMMER ARRESTOR WITH SHUT-OFF VALVE & ACCESS PANEL.
6. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW SHUT-OFF VALVE & ACCESS PANEL.

PLUMBING ENLARGED FLOOR PLAN 3

SCALE 1/4"=1'-0"



DEMOLITION NOTES:

1. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL ITEMS INDICATED TO BE REMOVED. CONTRACTOR SHALL VERIFY ALL SUCH ITEMS WITH OWNER PRIOR TO REMOVAL. ALL ITEMS NOT REFUSED BY OWNER SHALL BE REMOVED INTACT AND FULLY FUNCTIONAL BY CONTRACTOR FOR OWNER'S USE. ALL ITEMS REFUSED BY OWNER SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.
2. REMOVE EXISTING FIXTURES AND EQUIPMENT AS INDICATED. HOT WATER, COLD WATER, VENT AND/OR GAS PIPING SERVING SUCH ITEMS SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION WITHIN WALL OR ABOVE CEILING AND CAPPED OR PLUGGED UNLESS OTHERWISE NOTED (U.O.N.). WASTE PIPING SERVING SUCH FIXTURES SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION BELOW FINISHED FLOOR OR BEHIND WALL AND CAPPED OR PLUGGED U.O.N. ASSOCIATED EXISTING DEFUNCT PIPING IN CONCEALED LOCATIONS ABOVE CEILING, WITHIN WALLS, BELOW SLAB, OR BELOW GRADE SHALL BE ABANDONED IN PLACE OR REMOVED AS NECESSARY TO AVOID INTERFERENCE WITH NEW WORK. ASSOCIATED EXISTING DEFUNCT PIPING AND COMPONENTS IN EXPOSED LOCATIONS SHALL BE REMOVED U.O.N. (INCLUDING FLOOR DRAINS, WALL AND FLOOR CLEANOUTS, CLEANOUTS TO GRADE, ACCESS PANELS, SHUT-OFF VALVES AND COCKS, YARD BOXES, MANHOLES, CATCH BASINS, AND OTHER EXPOSED COMPONENTS). EXISTING DEFUNCT ELECTRICAL COMPONENTS SERVING EXISTING TO BE REMOVED EQUIPMENT SHALL BE DEMOLISHED AND REMOVED TO POINT OF ORIGIN.

DEMOLITION KEY NOTES:

1. EXISTING FLOOR DRAIN TO REMAIN.
2. EXISTING DRINKING FOUNTAIN TO REMOVED BY PLUMBING CONTRACTOR.
3. EXISTING WATER CLOSET TO BE REMOVED BY PLUMBING CONTRACTOR.
4. EXISTING LAVATORY TO BE REMOVED BY PLUMBING CONTRACTOR.
5. EXISTING FLOOR DRAIN TO BE REMOVED BY PLUMBING CONTRACTOR.
6. EXISTING TRAP PRIMER AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
7. EXISTING WATER HAMMER ARRESTOR AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
8. EXISTING SHUT OF VALVE AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.

NORTH

PLUMBING DEMOLITION PLAN 1

SCALE 1/8"=1'-0"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120369 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 10/27/2021

STUDIO W ARCHITECTS

Studio W Architects
980 9th St. Suite 2050
Sacramento, California 95814
[T] 916.254.5600
www.StudioW-Architects.com

PDS
PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW R. DOSSINGER No. M30630 Exp. 12/31/22 MECHANICAL STATE OF CALIFORNIA — DATE SIGNED: 10/19/2021

GENERAL NOTES

1. This sheet is part of a set and is not to be used alone.
2. This sheet is not to be used for construction unless the architect's stamp and signature appear on the drawings and the status box indicated drawings have been released for construction.
3. These plans and prints thereof, as instruments of service, are owned by the architect and are for use on this project only. Reproduction and/or distribution without the prior written consent of the architect is forbidden.
4. Copyright Studio W Associates, Inc. 2021.

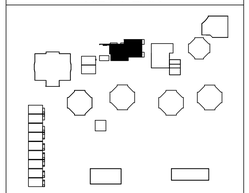
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
● DSA PLAN CHECK	08/16/2021
● DSA BACK CHECK	10/19/2021
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK USD
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

COREY ES MP BUILDING MODERNIZATION
7351 HOLDER ST.
BUENA PARK, CA 90620

PLUMBING DEMOLITION PLAN, FLOOR PLAN AND ENLARGED PLANS

Date	Project Number
10/19/2021	21008
Scale	Drawing Number
AS SHOWN	P1.1
Drawn / Checked	
LD / JS	

PRINT DATE: 8/10/2021 6:24:52 PM
FILE PATH: C:\Users\deeksha\Documents\21008-Buena-Park-USD-Corey-MPR-A19_deeksha.rvt

CARL E. GILBERT ELEMENTARY SCHOOL – MULTI-PURPOSE ROOM ALTERATION

DSA File No. 30-4
App. No. 04-120688
PTN. 66456-39

BUENA PARK UNIFIED SCHOOL DISTRICT

PROJECT MANUAL

MARCH 4, 2022

PROJECT #21029

Studio W Architects

SEALS PAGE

BUENA PARK SCHOOL DISTRICT
CARL E. GILBERT ELEMENTARY SCHOOL -MULTI-PURPOSE ROOM ALTERATION

OWNER:
Buena Park School District
6885 Orangethorpe Ave.
Buena Park, CA 90620

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

ARCHITECT:
Studio W Architects
400 Spectrum Center Drive
Suite 1640
Irvine, CA 92618

By: _____ 10/15/2021
Brian P. Whitmore, AIA, LEED AP — Date Signed
President & CEO

LICENSED ARCHITECT
BRIAN P. WHITMORE
No. C 30345
Ren. 9/30/23
STATE OF CALIFORNIA

CIVIL ENGINEER:
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18400 Von Karman Ave.
Suite 600
Irvine, CA 92612

By: _____ 03/03/2022
Ali Khamsi, PE — Date Signed
Managing Principal

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/23
CIVIL
STATE OF CALIFORNIA

STRUCTURAL ENGINEER:
Welsh Structures, Inc.
12722 Barrett Ln, Santa Ana, CA 92705

By: _____ 10/15/2021
Stephanie Welsh, S.E., Leed AP — Date Signed
President

REGISTERED PROFESSIONAL ENGINEER
No. 2998
Exp. 6-30-22
STRUCTURAL
STATE OF CALIFORNIA

PLUMBING ENGINEER:
Pocock Design Solutions
14451 Chambers Road
Suite 210
Tustin, California 92780:

By: _____ 10/15/2021
Andrew Gossman, PE, HFDP, LEED AP BD+C — Date Signed
Principal

REGISTERED PROFESSIONAL ENGINEER
ANDREW R. GOSSMAN
No. M35839
Exp. 3/31/22
MECHANICAL
STATE OF CALIFORNIA

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS
011000 Summary Studio W
012600 Contract Modification Procedures Studio W
012900 Payment Procedures Studio W
013100 Project Management and Coordination Studio W
013200 Construction Progress Documentation Studio W
013300 Submittal Procedures Studio W
014000 Quality Requirements Studio W
014200 References Studio W
015000 Temporary Facilities and Controls Studio W
016000 Product Requirements Studio W
017300 Execution Requirements Studio W
017419 Construction Waste Management Studio W
017700 Closeout Procedures Studio W
017823 Operation and Maintenance Data Studio W
017839 Project Record Documents Studio W
017900 Demonstration and Training Studio W

DIVISION 2 - SITE CONSTRUCTION
024119 Selective Demolition Studio W

DIVISION 5 - METALS
055000 Metal Fabrications Studio W

DIVISION 6 - WOOD AND PLASTICS
061000 Rough Carpentry Welsh
062000 Finish Carpentry Welsh
064100 Paneling Studio W
068200 Fiber Reinforced Plastic (FRP) Panels Studio W

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
071909 Concrete Moisture and Alkalinity Testing Studio W
071920 Concrete Moisture and Alkalinity Barrier Studio W
072100 Building Insulation Studio W
076500 Flexible Sheet Flashing Studio W
079200 Joint Sealants Studio W

DIVISION 8 - DOORS AND WINDOWS
083113 Access Doors and Frames Studio W

DIVISION 9 – FINISHES
092900 Gypsum Board Studio W
093000 Tiling Studio W
095123 Acoustical Tile Ceilings Studio W
096519 Resilient Tile Flooring Studio W
099100 Painting Studio W

DIVISION 10 - SPECIALTIES
101100 Visual Display Surfaces Studio W
101400 Signage Studio W
102800 Toilet and Bath Accessories Studio W
104400 Fire Protection Specialties Studio W

DIVISION 11 - EQUIPMENT
115217 Assistive Listening Devices Studio W

DIVISION 12 - FURNISHINGS
122116 Vertical Louver Blinds Studio W
126815 Folding Tables and Benches Studio W

DIVISION 22 – PLUMBING
220518 Escutcheons for Plumbing Piping Pocock
220523 General-Duty Valves for Plumbing Piping Pocock
220529 Hangers and Supports for Plumbing Piping and Equipment Pocock
220553 Identification for Plumbing Piping and Equipment Pocock
220719 Plumbing Piping Insulation Pocock
221116 Domestic Water Piping Pocock
221119 Domestic Water Piping Specialties Pocock
221316 Sanitary Waste and Vent Piping Pocock
221319 Sanitary Waste Piping Specialties Pocock
224213.13 Commercial Water Closets Pocock
224216.13 Commercial Lavatories Pocock
224713 Drinking Fountains Pocock

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING - none

DIVISION 26 – ELECTRICAL - none

DIVISION 31 – EARTHWORK
311000 Site Clearing KPFF

DIVISION 32 - EXTERIOR IMPROVEMENTS
320120 Detectable Warning Surfaces Studio W
321216 Hot-Mix Asphalt (HMA) Paving KPFF
321313 Concrete Paving KPFF
323113 Chain-Link Fences and Gates Studio W

END OF TABLE OF CONTENTS

DIVISION 1
GENERAL REQUIREMENTS

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Use of premises.
   3. Work restrictions.
   4. Specification formats and conventions.
   5. Pollution Control.
   6. Storm Water Pollution Prevention Plan.
   7. Lead-Containing materials.
   8. Additional DSA requirements.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Multi-Purpose Room Alteration.

B. Project Location: Carl E. Gilbert Elementary School.

C. Architect: Studio W Architects.

D. The Work consists of the following:
   1. The Work includes alteration of multi-purpose room and site work.
   2. The intent of these drawings and specifications is that the alteration, rehabilitation or reconstruction is to be in accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the contract documents wherein the finished work will not comply with Title 24, California Code of Regulations, a Construction Change Document, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by Division of the Sate Architect before proceeding with the repair work.

1.4 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.5 WORK RESTRICTIONS

A. On-Site Work Hours:
   1. Work shall be generally performed inside the existing building during normal business working hours of 8 a.m. to 5 p.m., Monday through Friday, except otherwise indicated.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI's MasterFormat 2004 numbering system.
   1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
   2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.7 POLLUTION CONTROL

A. Provide positive methods, means and facilities required to prevent contamination of the soil, water or atmosphere by the discharge of noxious substances from the construction operations.

1.8 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. The contractor shall submit a Storm Water Pollution Prevention Plan for approval by the City's Public Works and Community Development Departments. The plan shall show erosion control measures and indicate locations of staging, fueling, equipment and employee parking, and storage/stockpile locations. Locations for concrete washout shall be shown, as well as gravel site entrances and/or metal grates to keep soil from being deposited on City streets. The plan shall note that street sweeping shall occur as often as necessary, to ensure that no dirt or dust will remain on City streets. Drip pans shall be used under parked equipment and visqueen shall be shown on the plan to protect the soil in the fueling area. Only minor vehicle maintenance shall occur on-site. Maintenance shall occur in the fueling area and soil shall be protected by drip pans and visqueen.

B. Prepare a Storm Water Pollution Prevention Plan (SWPPP) and file a Notice of Intent with the State Water Resources Control Board for this project. The SWPPP will provide Best Management Practice (BMP) methods and controls for wet weather grading activities and erosion control for both onsite and offsite improvements, in accordance with the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The SWPPP shall include an erosion control plan.

1.9 MISCELLANEOUS PROVISIONS

A. General: Comply with the Project Conditions of Approval for both noise and dust control. If there is any conflict between drawings and specifications and the Project Conditions of Approval regarding noise and dust control, the Project Conditions of Approval shall govern.

B. Noise Control: The Contractor shall install noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction Equipment noise at the Site shall be limited and only as permitted by applicable law, rule or regulation. If classes are in session at any point during the progress of the Work, and, in the Owner's reasonable discretion, the noise from any Work disrupts or disturbs the students or faculty or the normal operation of Owner, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

C. Dust Control. The Contractor shall be fully and solely responsible for maintaining and upkeeping all areas of the Site and adjoining areas, outdoors and indoors, free from flying debris, grinding powder, sawdust, dirt and dust as well as any other product, product waste or work waste, that by becoming airborne may cause respiratory inconveniences to persons, particularly to students and Owner's personnel. Additionally, the Contractor shall take specific care to avoid deposits of airborne dust or airborne elements. Such protection devices, systems or methods shall be in accordance with the regulations set forth by the EPA and OSHA, and other applicable law, rule or regulation. Additionally, the Contractor shall be the sole party responsible to regularly and routinely clean up and remove any and all deposits of dust and other elements. Damage and/or any liability derived from the Contractor's failure to comply with these requirements shall be exclusively at the cost of the Contractor, including, without limitation, any and all penalties that may be incurred for violations of applicable law, rule or

regulation, and any amounts expended by the Owner to pay such damages shall be due and payable to the Owner on demand. Contractor shall replace any damages property or part thereof and professionally clean any and all items that become covered or partially covered to any degree by dust or other airborne elements. If classes are in session at any point during the progress of Work, and, in the Owner's reasonable discretion, flying debris, grinding powder, sawdust, dirt or dust from any Work disrupts or disturbs the students or faculty or the normal operation of the college, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal college hours and make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

1.10 LEAD-CONTAINING MATERIALS.

A. The Contractor shall assume that all ceramic tile and painted or varnished surfaces in the school district contain detectable levels of lead which trigger compliance with California Code of Regulation, Title 8, Section 1532.1. In addition, waste products from these materials could contain lead at levels which are subject to the hazardous waste requirements in the California Code of Regulations, Title 22, Sections 666260.1 - 66263.12 and 66268.1 - 66268.124 and the health and Safety Code Section 25157.8 and 25163, subdivision (c).

B. It is the Contractor's responsibility to handle and dispose of these materials in accordance with the regulations. If failure to comply with these regulations results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective action.

C. Lead-based paint should be removed only by professionals trained in hazardous material removal. A trained professional must follow very detailed procedures to minimize, control and contain lead dust generated by the removal process.
   1. The room should be sealed from the rest of the building. All furniture, carpets and drapes should be removed.
   2. Workers should wear respirators designed to avoid inhaling lead.
   3. No eating or drinking should be allowed in the work area. All food and eating utensils should be removed from the room. All cabinets as well as food contact surfaces should be covered and sealed.
   4. Occupants should be kept out of the room until the job is completed.
   5. Clothing worn in the room should be disposed of after working. The work clothing should not be worn in other areas of the building.
   6. Debris should be cleaned up using special vacuum cleaners with HEPA (high efficiency particle absorption) filters. A wet mop should be used after vacuuming.

1.11 ADDITIONAL DSA REQUIREMENTS

A. Comply with the following:
   1. Compliance with Title 24, for Parts 1-6 and 9.
   2. Title 24, Parts 1-5 shall be kept on site during construction.
   3. If any conflict or inconsistencies exist between the specifications and the drawings (including the general notes), more stringent requirements shall take precedence.
   4. Addenda:

a. In accordance with Section 4-338(a) of the California Administrative Code, changes or alterations of the approved plans and specifications prior to the letting of a construction contract for the Work shall be made by means of addenda, which shall be submitted to and approved by Division of the Sate Architect (DSA) prior to distribution to contractors.
b. Addenda shall be stamped and signed by Architect or Engineer in general responsible charge of preparation of the plans and specifications, and by the Architect or Engineer delegated responsibility for the portion affected by the addenda.
c. Addenda issued during bidding, if any, will be inserted following this page in the Contract Documents sets issued for construction. The provision of all addenda shall become part of the Contract Documents and Contractor shall be obligated to construct the Project in accordance with the Contract Documents as modified or supplemented by the addenda provisions.

5. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation. (IR-A6) (Section 4-338(c), Part 1)
6. Construction Change Document (Section 4-338 (c), Part 1) must be signed by all the following:
   a. A/E of Record.
   b. Owner (change order only).
   c. SEOR (when applicable).
   d. Delegated Professional Engineer (when applicable).
   e. DSA.
7. Project Inspector and testing lab must be employed by the Owner and approved by all of the following:
   a. A/E of Record.
   b. SEOR (when applicable).
   c. DSA.

B. Tests and Inspections - Chapter 17A:
1. All tests shall be performed by a testing facility acceptable to the architect and DSA. The testing facility shall be directly employed by the school district and no other entity or individual. Section Title 24, Part 1, Section 4-333 and 4-335.
2. Test reports shall be addressed to, and sent to, the school district by the testing facility. Copies of all test reports shall be sent to DSA, the architect, the structural engineer, and the project inspector by the testing facility. All reports shall be sent within 14 days of the date of the test. See Title 24, Part 1, Section 4-333 and 4-335.
3. A Verified Report, sighed by the California licensed civil engineer in charge of the testing facility which conducted the tests, shall be submitted to DSA upon completion of the project. The verified report shall state that all tests and inspections were made as required by the DSA approved documents. If the tests or inspections indicate that materials or workmanship did not meet the requirements of the DSA approved documents, the Verified Report shall list all noncompliant work. A copy of all test reports involving unresolved noncompliant work shall be attached to the Verified Report. In the event that not all required tests or inspections were made by the testing facility making this verified report, those tests and inspections not made shall be listed on the Verified Report. See Title 24, Part 1, Section 4-333 and 4-335.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:
   1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect may issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, or Changes not affecting the Structural Safety, Access Compliance or Fire & Life Safety portions of the work, on AIA Document G710, "Architect's Supplemental Instructions" or an equivalent form acceptable to District and subject to DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements for DSA Construction Change Document – Category B.

1.4 PROPOSAL REQUESTS (BULLETIN)

A. Owner-Initiated Proposal Requests: Architect may issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.5 CONSTRUCTION CHANGE PROCESS - DSA

A. Changes or alterations of the approved plans or specifications after a contract for the work has been let affecting the Structural, Access or Fire-Life Safety portions of the project shall be made only by means of Construction Change Documents submitted to and approved by DSA prior to commencement of the work shown thereon. Construction Change Documents shall comply with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements. Construction Change Documents shall be made using DSA form 141 and state the reason for the change and the scope of work to be accomplished, and, where necessary, shall be accompanied by supplementary drawings referenced in the text of the change order. All Construction Change Documents and supplementary drawings shall be stamped and signed by the architect or engineer in general responsible charge of observation of the work of construction of the project and by the architect or registered engineer delegated responsibility for observation of the portion of the work of construction affected by the change order, shall bear the approval of the school board and shall indicate the associated change in the project cost, if any. One copy of each Construction Change Documents is required for the files of DSA.

B. Construction Change Documents shall be signed by Architect of Record, Owner, Structural Engineer (when applicable), Delegated Professional Engineer (when applicable), and DSA.

C. No changes shall be made to approved documents without DSA approval.

D. All Construction Change Documents shall be signed by Architect and approved by DSA.

1.6 CONSTRUCTION (FIELD) CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with Continuation Sheets.
      b. Submittals Schedule.
      c. Contractor's Construction Schedule.
   2. Submit the Schedule of Values to Architect at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.
   3. No payment applications will be signed by the Architect prior to the Contractor submitting, and the Architect reviewing, a schedule of values.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Submit draft of AIA Document G703 Continuation Sheets.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.
      1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times:
   1. The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
   2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor's Construction Schedule (preliminary if not final).
   4. Products list.
   5. Schedule of unit prices.
   6. Submittals Schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   9. Copies of building permits.
   10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   11. Initial progress report.
   12. Report of preconstruction conference.
   13. Certificates of insurance and insurance policies.
   14. Data needed to acquire Owner's insurance.
   15. Initial settlement survey and damage report if required.

G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Project meetings.
   2. Requests for Interpretation (RFIs).

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for electronic submittals.
   2. Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
   3. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   4. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Submit electronic submittals directly to extranet specifically established for Project.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
4. Frequency of Attendance by Architect: Limited by Architect/Owner Contract.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing, if any.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for RFIs.
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Distribution of the Contract Documents.
   j. Submittal procedures.
   k. Preparation of Record Documents.
   l. Use of the premises.
   m. Work restrictions.
   n. Owner's occupancy requirements.
   o. Responsibility for temporary facilities and controls.
   p. Construction waste management and recycling.
   q. Parking availability.
   r. Office, work, and storage areas.
   s. Equipment deliveries and priorities.
   t. First aid.
   u. Security.
   v. Progress cleaning.
   w. Working hours.
3. Minutes: Record and distribute meeting minutes electronically.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. The Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written recommendations.
   n. Warranty requirements.
   o. Compatibility of materials.

p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
1) Review schedule for next period.
b. Review present and future needs of each entity present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.

15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes electronically.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.6 RFIs:

A. General:
   1. Contractor may submit a RFI to the Architect seeking clarification or interpretation of the contract documents. If in the Contractor's opinion the nature of the RFI requires a discussion, rather than simply an answer, the Contractor shall call the Architect to have such a discussion. The results of that discussion as well as all other RFI's must be presented in writing on a form approved in advanced by the Architect along with any supporting information or data, as well as the Contractor's recommended resolution. An oral RFI or a RFI presented on an unapproved form, or without adequate supporting information and Contractor's recommended solution, will be attributed solely to the contractor. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction means, methods, techniques, sequences, or procedures of the Contractor.
   2. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
   3. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information which is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the Architect in responding to a RFI.
   4. Architect's response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

B. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

C. Frivolous or Unnecessary RFIs: Cost of design professional’s time will be billed or deducted from progress payment.

D. Electronic RFIs: Follow vendor's instruction.
   1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow 21 days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

F. RFI Log: Prepare, maintain, and submit as instructed by electronic submittal vendor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. RFI Form.

END OF SECTION 013100

RFI FORM

Project:	RFI No:
Project No:	
To:	Date:
From:	
Subject:	
Discipline:	Category
Specification Section Title:	
Section Number: Page:	Article/Paragraph:
Sheet Number:	Detail:

Question:

Suggestion:

☐Attachment:

Undersigned certifies:

- Both drawings and specification sections were thoroughly reviewed.
- Processing time for frivolous RFIs will be charged back to Contractors at A/E billable rates.

Desired Response Date:	(However, A/E still have specified days to respond.)
Cost Impact: $	Schedule Impact: days
Drawing Impact:	Submitted by:
Signed:	Date:

Answer:

Answered by:

Signed: Date:

Copies: ☐ Owner ☐Consultants ☐ ☐
☐ File

1. A/E review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
2. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information that is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the A/E in responding to a RFI.
3. A/E response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

End of RFI Form

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Three Week Look-Ahead Schedule.
   4. Daily construction reports.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
   2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
   3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
   4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's final release or review.

B. Contractor's Construction Schedule: Submit three opaque copies of schedule, large enough (minimum 11 x 17) to show entire schedule for entire construction period.

C. Daily Construction Reports: Submit two copies at weekly intervals.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Concurrent with the development of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the submittal schedule with the Contractor's construction schedule described above.
   1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
   2. The Architect will review the schedule and indicate which submittals may be deleted from the submission requirement. The deletion of the submittal requirement for an item does not release the Contractor from any requirements of the Construction Contract, General Conditions or Plans and Specifications.

B. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
   1. Scheduled date for the first submittal.
   2. Related Section number.
   3. Submittal category.
   4. Name of subcontractor.
   5. Description of the part of the Work covered.
   6. Scheduled date for resubmittal.
   7. Scheduled date the Architect's final release or review.

C. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 15 days of the date established for "Commencement of the Work". The Construction Schedule must be submitted and accepted prior to approval of first pay application.
   1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as identified in the "Schedule of Values".
   2. Within each time bar indicate estimated completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
   3. Prepare the schedule on a sheet, or series of sheets, of stable reproducible media, of sufficient width to show data for the entire construction period.
   4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
   5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
   6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating "pre-calculated" and "actual" costs. On the line show dollar-volume of work performed as of the dates used for preparation of payment requests.
   1. Refer to Section "Payment Procedures" for cost reporting and payment procedures.

2.3 THREE WEEK LOOK-AHEAD SCHEDULE

A. Prepare weekly (or as determined by scheduled meeting times), prior to Project meetings, a computer-generated 3-week look-ahead schedule (bar chart) which is consistent with the Contractors schedule and depicts daily labor activities. The schedule will consist of the prior week, current week and the following 3 weeks.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial Completions and occupancies.
   19. Substantial Completions authorized.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates changes, including, but not limited to, changes in durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of reviewed schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Submittals Schedule Form.

END OF SECTION 013200

SUBMITTAL SCHEDULE FORM

☐ Preliminary Submittal Schedule: Include submittals required during the first 60 days of construction.
☐ Complete Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

Project: From:

To: Date:

Scheduled Initial Submittal Date	**Spec Section**		**Type:** ☐ **Action** ☐ **Info Only**	**Name of Subcontractor**	**Description**	**Scheduled Date of Approval**
	No.	**Title**				

End of Submittal Schedule Form

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for electronically submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Consult individual sections of specifications for specific submittals required under those sections and for further details and descriptions of requirements.

C. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports.
5. Division 1 Section "Closeout Procedures" for submitting warranties.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
9. Other Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Processing: All costs for electronic submittal, printing, preparing, packaging, mailing, or delivering submittals for initial submittals and all costs for re-printing, re-drawing, re-drafting, re-packaging, re-submitting, and re-mailing or re-delivering as required for all re-submittals shall be included in Contract Sum.

B. Sequence: Transmit each submittal in sequence which will not result in Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

E. Multiple Reviews: The Contractor shall also be responsible for all costs to Architect or Architect consultants for reviews requiring more than 2 reviews for same specification section.

F. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Review: Allow 21 days for review of each submittal. Architect will request for more time if needed.

G. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked "Approved" or "Furnish as Noted".

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating approval by Architect.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
   1. Submit request using attached form at end of section.
      a. Indicate date, project name, contractor name, address, and specific drawing (sheet number) required.
      b. Signed by Contractor agreeing with terms and conditions.

PART 2 - PRODUCTS

2.1 ELECTRONIC SUBMITTALS

A. General: Prepare and submit Submittals required by individual Specification Sections.
   1. Submit electronic submittals directly to extranet specifically established for Project.
   2. Vendor:
      a. Submittal Exchange (Basis of Design)
      b. Or equal.
   3. Contractor shall pay for all-inclusive use of Submittal Exchange by all project team members; data storage, security, and backup; setup, training, and support; and archiving once construction is complete.
      a. Documentation processed, housed and archived shall include but not limited to: Submittals, Addendum, Plans, Specs, Field Reports, Photos, Weekly Reports, Notice of deviations, Punch List, RFI's RFP's ASI's, CCD's, Cost Proposals, Test Reports, Meeting Notes., and Close Out.

2.2 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
      a. Circle items applicable.
      b. Cross-out items not applicable.
      c. Select item number if required.
   3. Submittal data must include complete documentation relating to all the specified features
   4. Include the following information, as applicable:
      a. Manufacturer's Submittal Form with all the options selected when available.
      b. Manufacturer's written recommendations.
      c. Manufacturer's product specifications.
      d. Manufacturer's installation instructions.
      e. Standard color charts.
      f. Manufacturer's catalog cuts.
      g. Wiring diagrams showing factory-installed wiring.

h. Printed performance curves.
i. Operational range diagrams.
j. Mill reports.
k. Standard product operation and maintenance manuals.
l. Compliance with specified referenced standards.
m. Testing by recognized testing agency.
n. Application of testing agency labels and seals.
o. Notation of coordination requirements.

5. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Do not use words "by others." Identify exactly who is responsible for the work.
   c. Identification of products.
   d. Fabrication and installation drawings.
   e. Roughing-in and setting diagrams.
   f. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   g. Shopwork manufacturing instructions.
   h. Templates and patterns.
   i. Schedules.
   j. Design calculations.
   k. Compliance with specified standards.
   l. Notation of coordination requirements.
   m. Notation of dimensions established by field measurement.
   n. Relationship to adjoining construction clearly indicated.
   o. Seal and signature of professional engineer if specified.
   p. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit 4 sets of prints and one electronic copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.

F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.3 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be

signed by an officer or other individual authorized to sign documents on behalf of that entity.

2. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

2.4 DEFERRED APPROVALS AND DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit 3 copies of a statement, signed and sealed by Structural Engineer Licensed in California, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
   1. Coordinate the work; do not delegate responsibility for coordination to any subcontractor.
   2. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
   3. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections.
   4. Trade submittals with “By Others”, “By General Contractor”, or similar coordination and work scope are not allowed. Identify, acknowledge, and resolve scope of work prior to submittal by Contractor. No extras will be allowed. Provide complete and coordinated submittals.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

F. Architect's and Consultant's review shall neither be construed as complete check nor relieve the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission as specified.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Electronic Files Transfer - Architectural Form.

END OF SECTION 013300

Subject: Architectural Electronic Files

Date: _____

Contractor Name: _____

Address: _____

Project: _____

At your request, we will provide electronic files for your convenience and use in the preparation of shop drawings related to _____, subject to the following terms and conditions:

Our electronic files are compatible with AutoCAD. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in the preparation of shop drawings for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub consultants that may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and/or involvement from each electronic display.

We will furnish you electronic files of the following architectural drawings: _____.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

If these terms are acceptable to you, please sign in the space provided below as evidence of our mutual understanding and agreement for this service. One signed copy of this agreement shall be returned to our office prior to delivery of the electronic files.

Very truly yours,

Architect

_____ _____

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:
   1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
   2. Other Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups:

1. Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
2. Comprehensive, completely integrated mockups of separate trades showing interface conditions, transitions, and relationships between materials and finishes.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Description of test and inspection.
   3. Identification of applicable standards.
   4. Identification of test and inspection methods.
   5. Number of tests and inspections required.
   6. Time schedule or time span for tests and inspections.
   7. Entity responsible for performing tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A licensed professional engineer who is legally qualified to practice in California and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An DSA approved NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

A. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

D. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

E. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes list of references.

1.3 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. “AHJ”: Agency having jurisdiction.

C. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

D. “Compatible”: When used for products, it shall comply with requirements including products recommended/ required by the manufacturer for warrantee acceptance.

E. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

I. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

J. “Owner”: As defined in Division 1 section “Summary”.

K. "Provide": Furnish and install, complete and ready for the intended use.

L. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
   2. Copies of standards and applicable building codes (Title 24 Parts 1-5) shall be kept on-site during construction.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations.

E. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

F. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

G. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include the following:
1. Division 1 Section "Summary" for limitations on utility interruptions and other work restrictions.
2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 1 Section "Execution Requirements" for progress cleaning requirements.
4. Other Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service:
1. Owner's existing sewer system is available for use without metering but will be billed to Contractor for use charges.

C. Water Service:
1. Water from Owner's existing water system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

D. Electric Power Service:

1. Electric power from Owner's existing system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

E. Sanitary Facilities:
1. Pay sanitary service use charge for temporary toilets, wash facilities, and drinking water for use of construction personnel.

1.5 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with 2019 CEC.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized steel bases for supporting posts.

B. Wind Screen Fabric: Green.

2.2 TEMPORARY FIELD OFFICES

A. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading located within construction area or within 30 feet of building lines. Comply with NFPA 241.

B. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

C. Sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices and pay for services for following:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack board.
   3. Drinking water and private toilet.
   4. Coffee machine and supplies.
   5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
   6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
   7. Internet access:
      a. DSL or Cable (if available) service separate from the dedicated telephone line to field office and Inspector's/Architect's field office at time of project mobilization. Provide high speed connection, maintain and pay for usage.
      b. Internet access shall be through wireless WiFi router, 100 Mbps minimum.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, electric, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
   1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Install temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Install temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Install temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Install electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Install temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

A. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

B. Parking: Provide temporary or use designated areas of Owner's existing parking areas if approved for construction personnel.

C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

D. Project Identification and Temporary Signs: Provide Project identification. Install signs where directed to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.
   3. Provide a 4'-0" x 8'-0" project sign constructed of 1/2 inch plywood or 10 mil corrugated mounted to 4"x4" posts 8'-0" long set 2'-0" deep into earth.
   4. Project sign shall include a graphic of the building (available from the Architect), Architect, Consultants, District, project, funding members with titles, and Contractor with contact information for the contractor. Text and layout shall be submitted for approval prior to installation.
   5. Location of project sign shall be coordinated with District's representative.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

F. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 1 Section "Summary."

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
   1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or as indicated on Drawings.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

F. Install full coverage with green wind screen fabric to block viewing through construction fencing. Wind screen fabric shall be anchored or weighted sufficiently to resist design wind loads indicated on Drawings.

G. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Construct dustproof partitions with 2 layers of 3-mil polyethylene sheet on each side. Cover floor with 2 layers of 3-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
   3. Insulate partitions to provide noise protection to occupied areas.
   4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
   5. Protect air-handling equipment.
   6. Weather strip openings.
   7. Provide walk-off mats at each entrance through temporary partition.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses.
   1. Prohibit smoking in construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and product substitutions.

B. Related Sections include the following:
   1. Division 1 Section "References" for applicable industry standards for products specified.
   2. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Other Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Proposed products by manufacturers not listed in Manufacturers list.

C. Basis-of-Design: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating “or equal” products of other named manufacturers.

D. District Standard: Where a specific manufacturer's product is named and accompanied by the words "District Standard," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics pre-selected by the District.
   1. District seeks to match products currently in use on other campuses; No substitution allowed.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
   1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
   2. Form: Tabulate information for each product under the following column headings:
      a. Specification Section number and title.
      b. Generic name used in the Contract Documents.
      c. Proprietary name, model number, and similar designations.
      d. Manufacturer's name and address.
      e. Supplier's name and address.
      f. Installer's name and address.
      g. Projected delivery date or time span of delivery period.
      h. Identification of items that require early submittal approval for scheduled delivery date.
   3. Completed List: Submit 3 copies of completed product list within days specified in General Conditions. Include a written explanation for omissions of data and for variations from Contract requirements.
   4. Architect's Action: Architect will respond in writing to Contractor within 21 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use form provided at end of Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, environmental, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: Architect will notify Contractor of acceptance or rejection of proposed substitution within 21 days of receipt of request.
   a. Form of Acceptance: Change Order.
   b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. All substitutions affecting the Structural, Access or Fire-Life Safety portions of the project shall be submitted to DSA for approval as a Construction Change Directive in accordance with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements.

D. The cost for any additional design or engineering required to gain DSA approval of a substitution shall be borne solely by the contractor. Any delay impacts resulting from DSA review and approval of substitutions shall be borne solely by the contractor.

E. Named Product and Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

F. District Standard Products Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Changes to the approved drawings and specifications shall be made by an addendum or a Construction Change Document approved by the Division of the State Architect, as required by Section 4-338, Part 1, Title 24, CCR.

B. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
   3. Refer to other sections for specific content requirements and particular requirements for submitting special warranties.

C. Warranty Period: Warranty period specified in each sections are minimum requirements. Do not modify manufacturer’s standard warranty period if the manufacturer’s warranty has longer warranty period.

D. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
   6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
   3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
   5. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or an equal product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with “or equal”.

6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Product Substitutions" Article to obtain approval by Architect for use of an unnamed product.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
   a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include custom or premium items.
   b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes standard, custom, and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 35 days after the Notice to Proceed**.** Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   2. Requested substitution does not require extensive revisions to the Contract Documents.
   3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   4. Substitution request is fully documented and properly submitted.
   5. Requested substitution will not adversely affect Contractor's Construction Schedule.
   6. Requested substitution has received necessary approvals of authorities having jurisdiction and has paid any fees.
   7. Requested substitution is compatible with other portions of the Work.
   8. Requested substitution has been coordinated with other portions of the Work.
   9. Requested substitution provides specified warranty.
   10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

11. Furnish samples upon requested by Architect.
12. Attached Request for Substitution Form shall used for substitution requests.

C. Substitutions for products or systems involving structural, fire/life safety and access compliance will be considered a Construction Change Document or Addendum, and will require DSA approval. This will add time required to review those substitutions requiring DSA approval. Contractor is solely responsible for all documentation and time required to obtain DSA approval.
   1. The use of a product other than specified or noted on the Drawings will require the Contractor to get Engineer, Architect and DSA approval.
   2. The Contractor shall be responsible to provide any information, calculations or drawings to show compliance with the DSA approved drawings and provide all documentation to the Architect and/or Engineer of record.
   3. Any changes or "substitutions" that impact or relate to DSA requirements for structural, ADA or fire and life safety MUST be approved by DSA prior to proceeding with the work.
   4. The Contractor shall also be responsible for all costs to the DSA, Architect or Architect consultants for review, co-ordination, and approval by the DSA.
      a. All costs for submittal to DSA and Architect/ design team expenses shall be back charged to the Contractor.

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Product List Form.
   2. Similar Installation List Form.
   3. Substitution Request Form.

END OF SECTION 016000

SUBSTITUTION REQUEST FORM

Substitutions are only allowed within number of days specified. Use this for m for requesting "or equal" products and materials.

Project:	Substitution Request Number:
	From:
To:	Date:
	Project Number:

Specification Section Title:		
Section Number:	Page:	Article/Paragraph:
Specified Item:		

Proposed Substitution:	
Manufacturer:	Address:
Contact Name:	Phone Number:
☐ Comparison between proposed substitution and specified product is attached. Note all differences.	

Reason for not using specified item:
☐ Specified product is no longer available.
☐ Substitution will improve lead time by _____ days
☐ Substitution will save Owner $ _____
☐ Other:

☐ List 3 similar installations including project name, address, owner, and date installed is attached.
Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explanation attached.

Supporting Data Attached:
☐ Product Data (indicate any options to be included)
☐ Drawings ☐ Test Reports ☐ Samples ☐ Color Chart ☐ Other:

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will not affect or delay Construction Progress Schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

- Substitutions for products or systems involving structural, fire/life safety and access compliance will require AHJ approval. This will add time required to review those substitutions requiring AHJ approval. Contractor is solely responsible for all documentation, cost, and time required to obtain AHJ approval.

Submitted by:	Firm:
Signature:	Date:
Comments:	

A/E Review:
☐ Approve Substitution.
☐ Approve Substitution as Noted.
☐ Reject Substitution. Use specified product.
☐ Reject Substitution. Use specified product. Substitution request received too late.

Signed by:	Date:
Comments:	

Owner's Review and Action (Approval of substitution is not valid without Owner's signature)
☐ Substitution approved.
☐ Substitution approved as Noted.
☐ Substitution rejected. Use specified product.

Signed by:	Date:

Comments:

End of Substitution Request Form

PRODUCT LIST FORM

☐ Preliminary Product List.
☐ Complete Product List.
Include a written explanation for omissions of data and for variations from Contract requirements.

Project: ______________________________ From: ____

To: ______________________________ Date: ____

Spec Section		**Early approval?**	**Product**	**Model No.**	**Manufacturer**	**Supplier**	**Installer**	**Delivery Date**
No.	**Title**	☐ **Yes** ☐ **No**						

End of Product List Form

SIMILAR INSTALLATION LIST FORM

Provide minimum 5 similar installations within last 3 years.

Project: _____ From: _____

To: _____ Date: _____

	Date of Installation	Project Name	Owner Info	GC Info	Architect info
1					
2					
3					
4					
5					
6					
7					
8					

End of Similar Installation List Form

SECTION 017300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Progress cleaning.
   3. Starting and adjusting.
   4. Protection of installed construction.
   5. Correction of the Work.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
   2. Division 1 Section "Submittal Procedures" for submitting surveys.
   3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Provide protection against weather, rain, wind, storms, frost and heat so as to maintain all work and materials free from injury or damage.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.

1.5 QUALITY ASSURANCE

A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. IOR's Inspection procedures.
   2. Warranties.
   3. Extra Materials.
   4. Final cleaning.
   5. DSA project closeout and Final Certification of Construction.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
   2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
   3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   5. Division 1 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
   6. Other Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 DEFINITIONS

A. IOR: Inspector of Record.

B. Inspection: IOR will inspect, not the Architect.

1.4 SUBMITTALS

A. Submit a copy of Title 24 Certificate of Acceptance forms submitted to enforcement agency.

1.5 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting IOR's inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. IOR's Inspection: Submit a written request for IOR's inspection for Substantial Completion. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after IOR's inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.6 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final IOR's inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
   2. Submit certified copy of Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. IOR's Inspection: Submit a written request for final IOR's inspection process for acceptance. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after IOR's inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use form attached.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date specified in General Conditions.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Include Table of Contents.
   3. Identify content with specification section number and title.
   4. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

5. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

1.9 EXTRA MATERIALS

A. Deliver to Owner's facility manager extra materials specified in each section.

B. Organize submitted materials in orderly sequence based on the table of contents of the Project Manual.
   1. Itemize each material and quantity in 8-1/2 by 11-inch paper.

C. Label each items for easy identification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting IOR's inspection for certification of Substantial Completion for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

3.2 DSA PROJECT CLOSEOUT AND FINAL CERTIFICATION OF CONSTRUCTION

A. Verified Reports: Per Title 24 Part1, Section 4-336.

B. Final Certificate of Construction: Per Title 24 Part1, Section 4-339.

C. Duties of Contractor: Per Title 24 Part1, Section 4-343.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
    1. Punch-List Form.

END OF SECTION 017700

PUNCH-LIST FORM

☐ Preliminary Punch-List.
☐ Final Punch-List.

Project:	From:
To:	Date:

Item No.	Room No.	Area	Description	Completion Date	A/E Verification

End of Punch-List Form

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Maintenance manuals for the care and maintenance of products, materials, and finishes.

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
   3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
   4. Other Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return 1 copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit 1 copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.

3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
   1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
   4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
   5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   3. Gas leak.
   4. Water leak.
   5. Power failure.
   6. Water outage.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions.
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard printed maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.

B. Related Sections include the following:
   1. Division 1 Section "Closeout Procedures" for general closeout procedures.
   2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Other Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit 1 set of marked-up Record Prints.

B. Record Specifications: Submit 1 copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit 1 copy of each Product Data submittal.
   1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Identification: As follows:
      a. Project name.
      b. Date.
      c. Designation "PROJECT RECORD DRAWINGS."
      d. Name of Architect.
      e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
   4. Assemble in single binder with table of contents.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Record Product Data Form.

END OF SECTION 017839

RECORD PRODUCT DATA FORM

Record Product Data is due no later than 10 calendar days after the date of Substantial Completion. Photocopy for continuation sheets. List products in order by specification section numbers.

Project Name:	From:
To:	Date:

Spec Section		**Originally Specified**		**Actually Installed**	
No.	**Title**	**Model**	**Manufacturer**	**Model**	**Manufacturer**

End of Record Product Data Form

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for requirements for preinstruction conferences.
   2. Other Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

A. Instruction Program: Submit 2 copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. At completion of training, submit 1 complete training manual(s) for Owner's use.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written performance-based test.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

DIVISION 2

SITE CONSTRUCTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Qualification Data: For demolition firm.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
   6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Storage or sale of removed items or materials on-site is not permitted.

B. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated. Patch and repair with similar materials.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts. Patch and repair with similar materials.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
1. Patch and repair with similar materials.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Division 1 Section "Construction Waste Management."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

DIVISION 5

METALS

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   2. Miscellaneous framing supports.
   3. Miscellaneous steel trim.

B. Related Sections include the following:
   1. Division 9 Section “Painting” for field painting.

1.3 DEFINITIONS

A. Exterior: Defined as the following:
   1. Areas, locations, and surfaces that are unprotected, or exposed to environmental elements.
   2. Areas, locations and surfaces within uncontrolled environments.
   3. Areas, locations and surfaces of unconditioned spaces, including belowgrade/underground, partially-exposed, or “covered” parking areas.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.5 SUBMITTALS

A. Product Data: For items specified.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.

1.6 QUALITY ASSURANCE

A. Treads, Risers, and Nosings: CBC Section 11B-504.
   1. Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast.
   2. The stripe providing clear visual contrast shall be a minimum of 2” wide to a maximum of 4” wide placed parallel to, and not more than 1” from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.
   3. The radius of curvature at the leading edge of the tread shall be no greater than ½”. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. The maximum angle for a riser to slope under the tread shall be 30 degrees from vertical. Nosings shall extend 1-1/4" maximum over the tread below.
   4. Treads shall be 11” deep minimum. Risers shall be 7” high maximum and 4” high minimum. All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Open risers are not permitted.

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal fabrications that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Provide products with average recycled content of steel products such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

D. Steel Tubing: ASTM A 500, cold-formed steel tubing.

E. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

F. Slotted Channel Framing: Cold-formed metal channels with continuous slot complying with MFMA-3.
   1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated.
   2. Material: Galvanized steel complying with ASTM A 653, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36.
   1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.
   1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Surface Preparation: SSPC-SP2 Hand Tool Clean and /or SSPC-SP3 Power Tool Clean.

D. Organic Zinc-Rich Primer: Complying with SSPC-Paint 20 and compatible with topcoat, and meets AISC slip coefficient as a Class B Coating.
   1. Surface Preparation: SSPC-SP6 Commercial Blast Clean.
   2. Products:
      a. Tnemec Company, Inc.; Tneme-Zinc 90-97, 2.5 to 3.5 mils DFT (Basis of Design)
      b. Other manufacturers listed in Division 9 Section "High Performance Coatings".
      c. Or equal.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
   1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as indicated. Drill bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Galvanize miscellaneous framing and supports where indicated.

E. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.8 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

C. Field painted exterior miscellaneous steel trim and interior miscellaneous steel trim, where indicated.

2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
1. ASTM A 123, for galvanizing steel and iron products.
2. ASTM A 153, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

D. Field Finish: Comply with Division 9 Section “Painting” for field painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for sectional doors securely to and rigidly brace from building structure.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

DIVISION 6
WOOD AND PLASTICS

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Wood framing, miscellaneous furring for wall finishes, miscellaneous blocking and rough hardware.

B. Related Sections:

1. Finish Hardware, see Section 087100 – Door Hardware.
2. Millwork and other finish carpentry.

1.2 REFERENCE STANDARDS

A. Softwood Lumber: PS 20 - American Softwood Lumber Standard.

B. NFPA - National Forest Products Association, National Design Specifications for Stress Grade Lumber and its Fastening.

C. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

D. Chapter 23, Part 2, Section 2303, Title 24, California Building Code, 2019.

E. Chapters 7, 23 and 35, California Building Code, 2019.

F. Plywood: U.S. Product Standard PS 1-09.

G. Lumber: U.S. Product Standard, PS 20-10.

1.3 QUALITY ASSURANCE

A. Provide lumber with visible grade stamp of an approved agency certified by NFPA.

1.4 DELIVERY, STORING AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up, off ground surface.

B. Identify framing lumber by grades and store grades separately from each other.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading lumber to prevent damages, splitting and breaking.

E. Seasoning:

F. Deliver materials at earliest date possible to allow maximum; drying time on site.

G. Pile and strip lumber at site to allow free circulation of air with pile protected from sun and moisture.

H. Air-season lumber for at least 60 days before covering with finish materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber: PS 20 and WCLIB Standard Number 17; Douglas Fir/Larch; graded in accordance with NFPA Grading Rules; maximum moisture content of 19 percent, grades as scheduled on drawings.

1. Douglas fir shall bear WCLIB grade stamp.

2. Pressure treated Douglas fir shall be No. 2 minimum and bear the AWPA quality mark. Cuts and holes shall be treated per AWPA Standard U1 (statements such as "or to refusal" are not permitted).

3. Comply with provisions of Title 24, CBC, 2019, Part 2, Section 2303.

B. Plywood:

1. Plywood for Roofs, Walls, and Floor Sheathing: PS 1-09 Structural I grade, APA C-D, exterior glue, except B-D for electrical and telephone panels.

2. Comply with CBC, 2019, Section 2303.

3. Roof and shearwall plywood shall be nominally 4 ft. x 8ft. in size. Do not use sheets less than 8 square feet, nor less than dimensions noted in paragraph 3.08 Plywood Placement.

2.2 ACCESSORY MATERIALS

A. Nails, Spikes, and Staples: Common (with standard lengths), except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Steel Hardware and Stock Framing Products by Connectors: ASTM A36 steel, galvanized for exterior applications, Simpson Strong-Tie Company. Products by KC Metal Products, or other approved manufacturer, may be substituted if equal. Comply with CBC, 2019, Title 24, Part 2, Chapter 23.

C. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

D. Wood Preservative: Wolmanizing treatment at least two weeks prior to delivery to site. Treatment shall meet or exceed AWPA P5.

E. Machine Bolts: ASTM A307.

F. Pressure Treatment: Sills and plates in contact with concrete or masonry within 48 inches of the ground, and wood posts and columns bearing directly on concrete shall be water-borne preservative pressure treated in accordance with paragraph, CBC 2019, Title 24, Part 2, Chapter 23.

1. At cuts, holes, notches and other field operations which expose a surface not factory treated with preservative, field apply preservative material compatible with original material shall bear mark AWPA Standard U1.

2. Meet local Air Quality Control Board Standards for field applied preservative treatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Selection of Lumber: Carefully select members. Ensure that exposed members are free of heart center. Select members so that knots and obvious defects will not interfere with placement of bolts, proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

B. Cut out and discard defects which will render a piece unable to serve its intended function. Lumber may be rejected by Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.

3.2 GENERAL FRAMING

A. In addition to framing operations normal to fabrication and erection indicated on drawings, install wood backing required for work of other trades, and for casework, chalkboards, toilet partitions and etc. as required. Wood backing to be installed in high traffic and high impact areas.

B. Set horizontal and sloped members with crown up.

C. Non-bearing stud walls, sills, and trimmers may be anchored to concrete per Structural Drawings.

D. Wall and partition studs and mullions shall be continuous from sill to plates. Run at least two studs on each side of openings in stud walls for openings in exterior walls and in partition openings larger than 5 feet, and partitions from sill to plate. In addition, place one stud trimmer to support each end of lintels over openings, unless shown otherwise.

E. Provide double plates with joints staggered and lapping at least four feet, and splice. Nail as required on Drawings.

F. Install nailing blocks and backing necessary for attachment of grounds, finishes, trim, fixtures, and do required cutting, furring, and backing for plumbing and heating pipes, fixtures, etc., as detailed in the Drawings or approved by the Structural Engineer and approved by the Division of the State Architect, Office of Regulations Services.

G. Frame stud partitions, furring and walls containing fire extinguisher cabinets, electric panels, plumbing, heating, or other pipes to give proper clearance. Cutting of studs in bearing partitions and shear walls is prohibited unless specifically detailed.

H. Do not place pipes exceeding 1/3 of plate width in partitions used as bearing or plywood-sheathed walls, but place them in furring completely clear of studs, unless detailed otherwise. Place approved piping in center of plates using neat hole. No notching is allowed. In no case allow pipes to pass through plates less than 5-1/2 inches wide.

I. Unless otherwise indicated provide 2 inch by 6 inch studs at 16-inches on centers. Refer to Structural Drawings for Simpson Metal Strap Ties, strap length, nail size and nail spacing where plates are broken.

J. Provide cross-bridging at 10 feet on centers maximum for all joists and rafters more than 10-inches deep. Use wood 2 inch by full depth of joist or rafter or approved metal type bridging. Nail metal bridging.

K. Provide isolated posts with connections at top and bottom; Simpson CC caps or CB base unless specifically detailed otherwise.

L. Double joists under parallel partitions with solid blocking between joists over points of support.

M. Provide a Simpson "CB" Steel Base Plate for untreated wood posts where they are or will be in contact with concrete.

N. Framing for horizontal plaster assemblies shall comply with the requirements of CBC 2019, Title 24, Part 2, Section 2507.

3.3 FIRE BLOCKING

A. Fire blocking shall conform with the requirements of CBC 2019, Title 24, Part 2, Chapter 7, Section 713.

B. Ensure that no fire stop is less than nominal 2 inches thick and no less in width than enclosed space within partition.

C. Provide stud wall and partitions with continuous rows of bridging or fire stops which will form a complete and effective separation in entire width of partitions, placed in such a manner that there will be no concealed air spaces greater than 8 feet in vertical dimension. Intermediate stops may be in line with opening headers. Provide furred space between stud walls and partitions with continuous fire stops at same elevation as those in the enclosing walls which must be installed horizontally, thus forming a solid stop from outside to outside of studs. At concealed draft passages or shafts including furring spaces, ensure that maximum dimension is no more than 8 feet. Provide fire stop partitions at suspended ceilings.

3.4 BEARINGS

A. Make bearings full unless shown otherwise.

B. Finish bearing surfaces on which structural members are to rest so as to give sure and even support. Where framing members slope, cut or notch ends as required to give uniform bearing surface.

3.5 SHIMMING

A. Do not shim framing member except where specifically shown or required by drawings.

3.6 BLOCKING

A. Install blocking required to support items of finish and to cut off concealed draft openings, both vertical and horizontal, between ceiling and floor.

3.7 ALIGNMENT

A. On framing members to receive a finished surface, align finish sub-surface to vary not more than 1/8-inch from plane of surface of adjacent framing and furring members.

3.8 PLYWOOD PLACEMENT

A. All installed plywood shall be in 4' x 8' sheets except where restricted by boundaries or changes.

B. Minimum Plywood Panel Sizes shall be as follows:

1. In horizontal plywood diaphragms, no panel less than 24 inches wide or 48 inches long shall be used.

2. In vertical plywood diaphragms, no panel less than 16 inches wide shall be used.

C. Center joints accurately over support unless otherwise shown on Drawings. Provide gapping of plywood substrate of 1/8-inch at abutting joints at all wall.

D. Protect plywood from moisture until succeeding component or materials are installed to cover plywood. Delaminating plywood shall be removed and replaced.

3.9 FASTENING

A. Use only common wire nails or spikes of standard lengths and gages as specified Table 2304.10.1, of the California Building Code, 2019.

B. For conditions not covered on drawings, Contractor to request clarification or provide penetration into piece receiving point not less than 1/2 length of the nail or spike, provided that 16d nails may be used to connect two pieces of nominal 2 inch thickness as specified by the Architect, and/or Structural Engineer and approved by the Division of the State Architect.

C. For bolts, drill holes 1/32-inch to 1/16-inch larger in diameter than bolts being used. Drill straight and true from one side only.

D. Bolt threads shall not bear on wood. Use washers under head and nut where both bear on wood. Use washers under nuts.

E. For lag-screws, and wood screws, pre-bore holes in accordance with CBC 2019, Title 24, Part 2, Chapter 23.

F. Screw, do not drive, lag screws and wood screws.

G. Nailing schedule shall be per CBC 2019, Title 24, Part 2, Chapter 23.

3.10 HOLLOW METAL FRAME GROUTING

A. At all exterior hollow metal jambs, drypack/grout the bottom 6-inch space between the hollow metal and 6-inch concrete curb at the wall. The intent is to fill solid the void between the frame and concrete curb. Install drypack/grout before any finishes are applied to the studs.

END OF SECTION

SECTION 062000

FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Handrails, chair-rails, trim, and soffits.

B. Related Sections:

1. Rough Carpentry; refer to Section 06 10 00.
2. Specialties; refer to Division 10.

1.2 REFERENCE STANDARDS

A. Woodwork Institute, 2nd Edition, 2014 Architectural Woodwork Standards, has recommendations for materials, construction, and installation procedures.

B. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

1.3 QUALITY ASSURANCE

A. Provide millwork fabricated in accordance with recommendations of Woodwork Institute. Fabricated millwork shall be certified and grades stamped with Woodwork Institute certification.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up off ground surface.

B. Do not store millwork outside. Do not deliver millwork to project until spaces or other surfaces to receive it are prepared.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading items to prevent damages, chips, splitting and breaking.

1.5 PROJECT CONDITIONS

A. Seasoning:

1. Deliver materials at earliest date possible to allow maximum drying time on site.

2. Air-season lumber for at least 60 days near job site before covering with finish materials.

1.6 SUBMITTALS

A. Provide manufacturer's standard color samples of plastic laminate (where applicable) and hardwood veneers for color and grain selection.

B. Provide Woodwork Institute Certified Compliance Certificates for millwork items, certifying that products fully comply with requirements of the grades specified.

C. Prepare Shop Drawings in accordance with Section 1 of the WI Standards referenced. Include the Woodwork Institute Certified Compliance label on the first page of each set of Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Finish Lumber: Graded in accordance with Western Wood Products Association Grading Rules; maximum moisture content of 15 percent.

ITEM	SPECIES	GRADE
Misc. Trim	Red Oak, rift cut	Custom
1 x 4 tongue and groove siding	Redwood	Grade A, square edge, random length.

2.2 ACCESSORIES

A. Nails, Spikes, and Staples: Common, except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

C. Machine Bolts: ASTM A307

D. Wood Preservative: Wolmanizing treatment at least two-weeks prior to delivery to site.

2.3 FABRICATION

A. Manufacture, mill, fabricate, assemble and finish millwork by skilled mechanics, using approved standard methods of manufacture and workmanship. Workmanship shall conform to the Custom Grade requirements of Woodwork Institute Manual referenced.

B. Conceal means of fastening where other than glue joinery is employed. Use fine casing nails, carefully set without hammer marks.

C. Level tops of counters and cabinetry to a tolerance of 1/32-inch in 4 feet in direction.

PART 3 - EXECUTION

3.1 PREPARATION

A. Selection of Lumber: Carefully select members so that defects will not interfere with proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

3.2 INSTALLATION

A. Installation of finish carpentry and millwork shall be in accordance with the applicable recommendations of the Woodwork Institute Manual, current edition, Architectural Woodwork Standards.

B. Install building specialty items specified under other sections which are not specified to be installed by specialty product manufacturer or supplier.

END OF SECTION

SECTION 064100 - PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes wood paneling.

1.3 SUBMITTALS

A. Product Data.

B. Shop drawings.

C. Visual samples: Submit two (minimum 4” x 6”) samples indicating color and texture to be expected in finished work.

D. Maintenance data: Give instructions for general maintenance and repair of surfaces and finishes.

1.4 QUALITY ASSURANCE

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 3 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paneling:
   1. Stikwood. (Basis of Design)
   2. Or equal.

2.2 WOOD PANELING

A. Product: Reclaimed Weathered Wood by Stikwood or equal.
   1. Description: Lightweight, real wood plank with a peel+stik adhesive tapeback.
   2. Common Name: American Eastern White Pine.
   3. Scientific Name: Pinus Strobus L.
   4. Grade: Recycled Original Weathered Patina Texture.
   5. Finish: Unfinished.
   6. Flame Spread Rating: (ASTME 84): Class A Treatment Option.
   7. Standard Milling: Flush Cut, No Tongue And Groove, Butt Joint.
   8. Installation: Peel and Stick.
   9. Certifications: Fsc® Recycled 100%, Indoor Advantage™ Gold.
   10. Indoor Air Quality Certified To Scs-Ec10.3-2014 V4.0.
   11. Typical Dimensions:
      a. Thickness: 5/32″.
      b. Width: 5″.
      c. Length(S): Random 12″–48″.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Panels are subject to the effects of humidity and temperature. Do not use in high humidity areas.

B. Open cartons and carefully inspect all panels.

3.2 INSTALLATION

A. Install all materials in strict accordance with the manufacturer’s installation instructions.

B. Avoid contamination of the panel faces with adhesives, solvents or cleaners during installation.

3.3 CLEANING

A. Clean panels, trim and hardware according to the manufacturer’s recommendations.

END OF SECTION 064100

SECTION 068200 - FIBER REINFORCED PLASTIC PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Fiber reinforced plastic panel system for adhesive mounting.
2. Moldings, adhesive, and joint sealants.

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

B. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

C. Maintenance Instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of fiber reinforce plastic panels that fails in materials or workmanship within specified warranty period.
1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fiber Reinforced Plastic Panels: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Marlite. (Basis of Design)
   2. Formica. (Basis of Design)
   3. Nudo.
   4. Crane Composites (formerly Kemlite).
   5. Glasteel.
   6. Or equal.

2.2 PANEL SYSTEM

A. Plastic Panel System: Factory finished panels, trim, sealant, and accessories.

B. Product: Standard FRP by Marlite or equal.
   1. Fiberglass reinforced polyester, USDA approved for incidental food contact.
   2. Surface Burning Characteristics: Flame spread index of 200 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84 (Class C/III).
   3. Thickness: 3/32 inch, nominal.
   4. Width: 48 inches.
   5. Height: 96 inches.
   6. Flexural Strength: 17,000 psi, when tested in accordance with ASTM D 790.
   7. Flexural Modulus: 600,000 psi, when tested in accordance with ASTM D 790.
   8. Tensile Strength: 8,000 psi, when tested in accordance with ASTM D 638.
   9. Tensile Modulus: 9,430 psi, when tested in accordance with ASTM D 638.
   10. Barcol Hardness: 40, when tested in accordance with ASTM D 2583.
   11. Impact Resistance: 7 ft-lb/in, when tested in accordance with ASTM D 256, Izod method.
   12. Coefficient of Thermal Expansion: 0.0000157 in/in/degree F, measured in accordance with ASTM D 696.
   13. Water Absorption: 0.17 percent, when tested in accordance with ASTM D 570.
   14. Specific Gravity: 1.53, when tested in accordance with ASTM D 792.
   15. Front Finish: As indicated on Drawings.
      a. Color: As indicated on Drawings.

C. Product: HardStop Decorative Protection Panels by Formica or equal.
   1. Panel Core Material: Treated fiberglass core.
   2. Laminate Grade:
      a. Grade H1, 0.0677 Inches - 0.0827 Inches.
   3. Tested Data:
      a. ANSI / NEMA LD-3: High Pressure Decorative Laminates.
      b. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials. Class 1/A Fire-rated (UL723/ASTM E-84).
         1) Flame-Spread Index: 25 or less.
         2) Smoke-Developed Index: 450 or less.

c. GreenGuard Gold Indoor Air Quality Certified®.
d. SEFA 8.1 approved.
e. ASTM G 22 Bacterial Growth Resistance.

4. Laminate Finish: As indicated on Drawings.
5. Laminate Color(s): As indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Take panels out of cartons and allow to acclimatize to room conditions for at least 48 hours prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Clean surfaces thoroughly prior to installation.

D. Protect existing surfaces from damage due to installation.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use the adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.

C. Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch expansion space.

D. Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.

E. Protect installed products until completion of project.

F. Touch-up, repair or replace damaged products after Substantial Completion.

END OF SECTION 068200

DIVISION 7

THERMAL AND MOISTURE PROTECTION

SECTION 071909 - CONCRETE MOISTURE AND ALKALINITY TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for independent testing and inspection requirements for concrete moisture and alkalinity.

B. Related Sections include the following:
   1. Division 7 Section "Concrete Moisture and Alkalinity Barrier" for concrete sealers to reduce moisture and alkalinity level when testing fails.

1.3 SUBMITTALS

A. Independent testing agency qualifications: Past 4 year history of testing of comparable project size and scope.

B. Product data: Moisture test kit.

C. Testing Results: Provide interior temperature, humidity, moisture vapor and alkalinity results for testing period.
   1. Alkalinity and Adhesion Test Report.
   2. Moisture Test Report.

D. Locations Map: Provide each testing result documented on a locations map. Map may be finish floor plan by Architect or similar representation.

E. Record Submittals: Testing reports and locations map.

1.4 SCHEDULING

A. Site Meeting: Testing Agency, Owner, Architect and Contractor shall meet 30 days prior to flooring installation to discuss testing requirements, specifications and locations prior to testing.

PART 2 - PRODUCTS

2.1 MOISTURE TESTING

A. Test Method: ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
   1. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride is NOT acceptable method.

B. The In-Situ Method:
   1. In-situ probes deepen concrete moisture measurement. For decades, builders used (and some still do) the anhydrous calcium chloride test for concrete moisture vapor emissions rate (MVER). The MVER is defined as the rate of water vapor emissions from the surface of concrete and is determined with the use of a desiccant material sealed to the slab surface for a specified time period, then measured. It has been believed that the change in the desiccant weight could be translated into a moisture ratio for the concrete beneath.
   2. In-situ concrete moisture testing places sensors, or probes, inside the slab itself. As concrete dries, moisture migrates from the bottom of the slab to the surface where it can evaporate away. Logically then, moisture levels at the bottom of a slab will read higher from those at the surface. In-situ probes provide relative humidity (RH) measurements at 40% of the slab's depth*, a position proven to more accurately portray the final RH levels of the slab if it were to be sealed at that point in time and the slab moisture allowed to fully equilibrate.

C. Acceptable Testing Devices for ASTM F2170 Test:
   1. Wagner Meters Rapid RH® system by Wagner.
   2. Protimeter by T Equipment.
   3. Relative Humidity Meter system by American Moisture Test.
   4. Or equal.

2.2 ALKALINITY TESTING

A. Alkalinity Test, ASTM F 710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
   1. Digital wide range 1–14 pH meter.
   2. Waterproof flat tip.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site: Weatherproofed, doors installed and windows secured. Do not start testing process when site has standing water, surface contaminates, exposed to exterior conditions or concrete installation is less than 90 days of age.

3.2 PREPARATION

A. Clean concrete substrates of adhesives residue, paint, curing, sealing, floor coverings a minimum of 24 hours prior to installation of testing equipment.

B. Temperature & Humidity: Maintain site at the temperature and humidity conditions to those anticipated during normal occupancy and maintain these conditions minimum of 7 days (exceed ASTM F1869 requirements) prior and during testing period.

C. When a building is not under HVAC control, a recording hygrometer or data logger shall be in place recording conditions during the test period. A transcript of this information must be included with testing results.

3.3 MOISTURE TESTING

A. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F2170.

B. Floor shall have reading of 95% or less per ASTM F2170; unless finish flooring product require better value.

3.4 ALKALINITY TESTING

A. Test: Perform pH testing per ASTM F710.

B. pH range between 8 and 10; unless finish flooring product require better value.

3.5 FIELD QUALITY CONTROL

A. Testing: Engage and pay for qualified independent testing agency specified to perform the following field tests and inspections and prepare test reports:
   1. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures.
   2. Testing agency shall verify thickness of coatings during traffic coating application.
   3. If test results show coating materials do not comply with requirements, remove noncomplying materials, prepare surfaces, and reapply coatings.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 071909

SECTION 071920 - CONCRETE MOISTURE AND ALKALINITY BARRIER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplemental, and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Concrete moisture and alkalinity barrier when moisture or alkalinity test fails.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for independent moisture and alkalinity testing prior to installation of flooring materials.

1.3 PERFORMANCE REQUIREMENTS

A. Ground and Floor Surfaces: Slip resistant per CBC 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include manufacturer's printed statement of VOC content.

B. Samples: For each type of barrier and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

C. Manufacturer Certificates: Signed by manufacturers certifying that barrier comply with requirements.

D. Qualification Data: For Installer.

E. Product Test Reports: Independent third party testing results:
   1. ASTM E 96 Water Vapor Transmission: up to 95% Vapor Reduction
   2. ASTM D 4541 Concrete Adhesion: 500psi or concrete cohesive failure
   3. ASTM D 1308 Chemical Resistance: 100% resistant to acid and alkali

F. Field Quality Control Documents: Post installation testing by independent testing agency per ASTM F1869, ASTM D 4541.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Extended Warranty Period: Barrier warranty for 15 years covering performance, concrete adhesion, moisture or alkalinity damage to barrier and installed floor coverings. In the event of barrier failure, manufacturer shall cover labor and material cost to replace moisture or alkalinity damaged flooring or coatings, reapply barrier, adhesives, patching compounds and installation accessories.
   1. Moisture Vapor Reduction: No upper performance limitations.
   2. Alkalinity Control: No upper performance limitations.
   3. Manufacturing defects warranties are not acceptable.

B. Warranty shall not exclude ACI documents, dew point, concrete salts, admixtures, resin and silicate surfaces treatments. Installations on slab surfaces deems acceptance of on site conditions. Barrier manufacturer is responsible for complete review of concrete mix designs, admixtures, sub slab vapor barrier installed and curing methods for written acceptance prior to installations.

C. Installer: Submit 15 year warranty covering installation defects and improper installations on workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Concrete Moisture and Alkalinity Barrier: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. VAP-1 2000 FS by Koster. (Basis of Design)
   2. Vapor-Guard DC by Advance Moisture Control.
   3. MES 100 by Floor Seal Technology Inc.
   4. Or equal.

2.2 CONCRETE MOISTURE AND ALKALINITY BARRIER

A. Product: VAP I 2000 FS by Koster or equal.
   1. Fast-setting, one-coat, membrane-forming, moisture vapor control system consisting of a unique combination of epoxy resins and other compounds formulated to prevent floor covering failures on concrete slabs with elevated levels of moisture.
   2. Meets or exceeds the performance requirements in ASTM F3010-13 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
   3. Has no upper limit for water vapor emission from concrete floor slabs. It can be applied to concrete slabs with relative humidity up to 100% RH and it provides protection from sustained exposure to pH 14.
   4. Low permeance of 0.047 perms, moisture blocker for virtually all types of flooring, including low permeance flooring such as sheet goods and rubber tile.
   5. Compliant with all state and federal VOC regulations, having VOC content of 0 g/L, which allows installation in sensitive areas such as hospitals, schools, and grocery stores.

B. Concrete Topcoat: Cement based self-leveling underlayment product acceptable to sealant manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to barrier manufacturer's written instructions, to ensure that surface is dry enough.
   1. Shot blast surface to allow maximum penetration and adhesion. Grind near walls and edges.

B. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live plants and grass.

C. Coordination with Sealants: Do not apply barrier until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
   1. Barrier work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATION

A. Barrier: Apply by squeegee and roller application methods to saturate entire surface. Spread rates shall produce results of up to 95% moisture reduction per ASTM E 96 and post installation testing rate specified.

B. Roller and squeegee methods to saturate concrete porosity. Final surfaces shall be light reflective white.

C. Joint and Crack Treatment: Apply barrier directly over cracks, holes, and slab imperfections for maximum flexibility, moisture vapor and alkalinity control.

D. Cement Topcoat: As required for applications under resilient flooring for sealants installed after curing of concrete.

3.3 FIELD QUALITY CONTROL

A. Site Tests:
   1. Conduct moisture-alkalinity test by an independent testing company prior to resilient flooring and carpet installation.

3.4 CLEANING

A. Immediately clean barrier from adjoining surfaces and surfaces soiled or damaged by barrier application as work progresses. Repair damage caused by barrier application. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071920

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Concealed thermal and sound insulation.

B. Related Sections include the following:
   1. Division 9 Section "Gypsum Board" for installation in metal-framed assemblies of insulation specified by referencing this Section.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Surface-Burning Characteristics: ASTM E 84.
   2. Fire-Resistance Ratings: ASTM E 119.
   3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of building insulation that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass-Fiber Batt/Blanket Thermal and Sound Insulation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Johns Manville (JM). (Basis of Design)
   2. CertainTeed Corporation.
   3. Guardian Fiberglass, Inc.
   4. Knauf Fiber Glass.
   5. Owens Corning.
   6. Lamtec.
   7. Or equal.

B. Extruded Polystyrene Foam: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Styrofoam Z-Mate by Dow. (Basis of Design)
   2. Atlas.
   3. DiversiFoam Products.
   4. Owens Corning.
   5. Pactiv Building Products Division.
   6. Or equal.

2.2 GLASS-FIBER BATT/BLANKET INSULATION

A. Unfaced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics. Glass-fiber bonded with acrylic thermosetting binder.
   1. For walls and partitions: Unfaced Batts.

2. Formaldehyde-free, Unfaced Batts by JM or equal.

B. Faced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft vapor-retarder membrane on 1 face.
   1. For ceilings under decks: FSK-25 Faced Batts with 2 inch tabs or Panel Deck FSK-25 Faced Batts with 5 inch tabs.
   2. Formaldehyde-free, FSK-25 Faced Batts by JM or equal.

C. Thermal Rating: R values as indicated on Drawings.

2.3 EXTRUDED POLYSTYRENE FOAM (RIGID INSULATION)

A. Extruded Polystyrene Foam: ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively.
   1. 1.5 inch thick board: R-7.5.
   2. R-rating: Built-up board to comply with R-rating indicated on Drawing.

2.4 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inches wide.

B. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Install insulation in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
   4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
   5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically.
   6. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:

D. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces for sound deadening, sound absorption, thermal protection, or air-infiltration reduction. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

3.5 INSTALLATION OF INSULATION IN CEILINGS

A. Install insulation to achieve thermal indicated attached to roof or floor deck from below.

B. Insulation to roof or floor deck: Install by one of following methods.
   1. Staple insulation to sides of joists or trusses at 4 inches o.c. through bent down flanges of vapor barrier in such manner that air leaks between insulation and joints are minimized.
   2. Fasten insulation anchors to deck substrates with insulation anchor according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 076500 - FLEXIBLE SHEET FLASHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Flexible sheet flashing for windows, doors, parapets, and other openings and where indicated on Drawings.

1.3 SUBMITTALS

A. Concurrent Review Requirements: Submit submittals of this section with doors and windows sections.

B. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of flexible sheet flashing.

C. Shop Drawings: Show locations and extent of flexible sheet flashing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

D. Samples: For the following products:
   1. 12-by-12-inch square of flexible sheet flashing.

E. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

F. Qualification Data: For Installer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for flexible sheet flashing.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm that is acceptable to flexible sheet flashing manufacturer for installation of flexible sheet flashing required for this Project.

B. Source Limitations: Obtain flexible sheet flashing materials through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by flexible sheet flashing manufacturer.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Store rolls according to manufacturer's written instructions.

E. Protect stored materials from direct sunlight.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of flexible sheet flashing that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flexible Sheet Flashing: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. WR Grace (Basis of Design).
   2. FortiFlash by Fortifiber.
   3. FlexWrap and StraightFlash by DuPont.
   4. Or equal.

2.2 FLEXIBLE SHEET FLASHING

A. Product: Vycor Plus by WR Grace or equal.
   1. Self-Adhered, cross-laminated high-density polyethylene (HDPE) sheet, backed by aggressive pressure-sensitive rubberized asphalt adhesive.
   2. Thickness: 25 mil minimum per ASTM D3767, Method A.
   3. Low temperature flexibility: Unaffected at minus 45 degrees F. per ASTM D1970.

4. Elongation, ultimate failure of rubberized asphalt: 200 percent minimum per ASTM D412.
5. Cracked cycling 100 cycles: Unaffected at minus 25 degrees F. per ASTM C836.
6. Lap adhesion at minimum application temperature: 60 plf width per ASTM D1876 modified.
7. Adhesion to concrete at minimum application temperature: 60 plf width per ASTM D903.
8. ICBO: ER-6141.
9. Recommended exposure limit: 30 days.
10. Perm-A-Barrier by Grace is not acceptable.

2.3 AUXILIARY MATERIALS

A. Mastic, Joint Sealant, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by flexible sheet flashing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by flexible sheet flashing manufacturer.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install flexible sheet flashing in accordance with the manufacturer's written instructions, AAMA Publication 2400, and the applicable code.

END OF SECTION 076500

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

D. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.

E. Qualification Data: For Installer.

F. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
   1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
   2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

G. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
   1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
   2. When joint substrates are wet.
   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
   4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 2 years.

B. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
   1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

C. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Joint Sealants: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Sika Corporation
   2. Pecora Corporation.
   3. Bostik.
   4. Dow Corning Corp.
   5. GE Plastics.
   6. Sonneborn Building Products, ChemRex, Inc.
   7. Tremco, Inc.
   8. The Sherwin-Williams Company.
   9. Or equal.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

C. Colors of Exposed Joint Sealants:
   1. As selected by Architect from manufacturer's full range.
   2. Areas where concrete joint sealant will be adjacent to concrete other than standard gray, sealant color shall match adjacent color as approved by Architect.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
   3. Remove laitance and form-release agents from concrete.
      a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
   4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
   1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
   2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
   3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.

4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT LOCATION

A. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
   1. Products:
      a. SikaFlex 1A or 15LM by Sika Corp.
      b. Dynatrol I-XL by Pecora.
      c. Stampede 1 by The Sherwin-Williams Company.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Metal Lap Joint Sealant: Silicone, Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
   1. Products:
      a. SikaSil WS-295 Silicone by Sika Corp.
      b. 895 Silicone or Sil-Span by Pecora.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Concealed sealant bead in sheet metal work.

b. Concealed sealant bead in siding overlaps.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
1. Products:
a. AC-20 manufactured by Pecora.
b. 950A manufactured by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Applications:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Interior Floor Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Grade P, Class 25, Uses T, M and A; two-part.
1. Products:
a. SikaFlex 2C SL or NS with TG Additive by Sika Corp.
b. NR-200 self-leveling polyurethane and/or DYNATRED non-sag, traffic-grade polyurethane sealants by Pecora.
c. Stampede 2SL by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Standard colors matching finished surfaces.
4. Applications: Use for joints up to 1-1/2 inches.
a. Expansion joints in floors.

E. Concrete Paving Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Class 25, Uses T, I, M and A; two-part.
1. Products:
a. NR-200 Urexpan and/or DYNATRED non-sag, traffic-grade polyurethane sealant by Pecora or equal.
b. Stampede 2NS by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Gray or Limestone.
4. Applications:
a. Joints in sidewalks and vehicular paving.

F. Butyl Sealant: ASTM C 920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O; single component, solvent release, non-skinning, non-sagging.
1. Products:
a. BC-158 sealant by Pecora.
b. WL Silicone Rubber by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 12-1/2 percent.
4. Service Temperature Range: -13 to 180 degrees F.
5. Shore A Hardness Range: 10 to 30.

G. Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Products:
a. SikaSil WS 290 or WS 295 by Sika Corp.

b. 864 LM Architectural silicone or 890 silicone sealant by Pecora.
c. 790 by Dow Corning Corporation.
d. WL Silicone Ultra WL09210.

2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 25 percent.
4. Applications:
   a. Interior or exterior for joints 1/8 to 1-1/2 inch wide.
   b. Exterior use at expansion joints in masonry where substantial movement is expected.
   c. Glazing application.

END OF SECTION 079200

DIVISION 8

DOORS AND WINDOWS

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Access doors and frames for walls and ceilings.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for mortise or rim cylinder locks and master keying.
   2. Division 9 Section “Painting” for field applied finishes.

1.3 SUBMITTALS

A. Product Data: For each type of access door and frame indicated. Include construction details, materials, individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.

D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of access door(s) and frame(s) through one source from a single manufacturer.

B. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of access doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Access Doors and Frames: Subject to compliance with requirements, provide products by one of the following:
   1. Karp Associates Inc.
   2. Acudor.
   3. Milcor Inc.
   4. Nystrom, Inc.
   5. MIFAB.
   6. Or equal.

2.2 STEEL MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153, for galvanizing steel and iron hardware.

B. Steel Sheet: Cold-rolled steel sheet substrate complying with ASTM A 1008, Commercial Steel (CS), exposed.

C. Steel Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   1. Factory Surface Preparation for Steel Sheet: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
   2. Field Finish: Factory prime for field painting as specified in Division 9 "Painting".

D. Drywall Beads: Edge trim formed from 0.0299-inch zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum board.

2.3 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Recessed Door to Receive Drywall Type:
   1. Fire-Rated: Model 450FR by Karp.
   2. Non-Fire-Rated: Model RDW by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Door shall be recessed 1 inch.
   5. Trim shall be galvanized steel dry wall bead.
   6. Hinge shall be concealed pivoting rod type.
   7. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   8. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   9. Door Sizes:
      a. As indicated on Drawings.
   10. Field Finish: Comply with Division 9 Section “Painting”.

B. Flange Type:
   1. Fire-Rated: Model KRP-250 by Karp.
   2. Non-Fire-Rated: Model DSC-214M by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Flange: One-piece construction, 3/4 inch wide.
   5. Hinge shall be concealed continuous piano hinge.
   6. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   7. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   8. Door Sizes:
      a. As indicated on Drawings.
   9. Field Finish: Comply with Division 9 Section “Painting”.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
   1. Exposed Flanges: Nominal 1 to 1-1/2 inches wide around perimeter of frame.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
   1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

A. Field finish per Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

DIVISION 9

FINISHES

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Interior gypsum board.

B. Related Sections include the following:
   1. Division 9 Section "Tiling" for tile backer board installed as substrates for ceramic tile.
   2. Division 9 Section “Painting” for primers and finishes applied to gypsum board surfaces.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
   2. Finishes: Level 4 and 5 of gypsum board finish indicated for use in exposed locations. 4 by 4 foot sample.
      a. Finishes: For each finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
      b. Each finish indicated.
      c. Each areas such as walls, ceilings, and soffits.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gypsum board that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Interior Gypsum Board: Subject to compliance with requirements, provide products by one of the following:
   1. Georgia Pacific. (District Standard)
   2. USG Corporation.
   3. National Gypsum Company.
   4. Or equal.

B. Steel Trim Accessories: Subject to compliance with requirements, provide products by one of the following:
   1. USG Corporation.
   2. Amico.
   3. Or equal.

2.2 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.

B. Type X:
   1. Thickness: 5/8 inch for new work.
   2. Long Edges: Tapered.
   3. Products:
      a. Toughrock Fireguard X by Georgia Pacific.
      b. Type X by USG.
      c. Or equal.

C. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.
   1. Core: 5/8 inch, Type X.
   2. Use: Toilet rooms and janitor's closets walls with painted finish.
      a. DensArmor Interior Guard by Georgia Pacific.
      b. USG Mold Tough Firecode Core Gypsum Panels by USG.
      c. XP Wallboard by National Gypsum.
      d. Or equal.

2.4 TRIM ACCESSORIES

A. Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:
      a. Cornerbead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.
      g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim and Reveal: As specified in Division 9 Section "Portland Cement Plaster".

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Acoustical Sealant: Sheetrock Acoustical Sealant by USG or equal.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

D. Thermal and Acoustical Insulation: As specified in Division 7 Section "Building Insulation."

E. Gypsum Board Adhesives:
   1. High performance latex-based construction adhesive designed for gypsum board applications.
   2. Adhesives shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.
   3. Products:
      a. Green Series SW-325 Shear & Drywall Adhesive by OSI.
      b. Drywall Adhesive GDWA by Grabberman.
      c. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners, unless otherwise indicated.
   2. LC-Bead: Use at exposed panel edges.
   3. L-Bead: Use where indicated.
   4. U-Bead: Use at exposed panel edges.
   5. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.4 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Comply with GA 214 for Level definitions.
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for ceramic tile or acoustical tile.
   3. Level 3: Where indicated on Drawings.
   4. Level 4: At panel surfaces that will be exposed to view with flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.
   5. Level 5: At panel surfaces that will be exposed to view with non-flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Ceramic tile.
   2. Cementitious backer units installed as part of tile installations.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

1.4 SYSTEM DESCRIPTION

A. Accessibility Requirements for Tile Flooring:
   1. Ceramic and Quarry Tile Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
   1. Propose locations of expansion, contraction, control, and isolation joints if not indicated on Drawings.

C. Installation Method: Show TCA installation method number for each tiled area in tabulated form.

D. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

E. Product Certificates: For each type of product, signed by product manufacturer.

F. Qualification Data: For Installer.

G. Material Test Reports: For each tile-setting and -grouting product.

1.6 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.
   1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

D. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of ceramic tile and accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceramic Tile: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Daltile; Div. of Dal-Tile International Inc.
   2. Crossville Ceramics Company, L.P.
   3. Interceramic.
   4. Bedrosians.
   5. Emser Tile.
   6. Or equal.

B. Setting, Grouting Materials: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Custom Building Products.
   2. LATICRETE International Inc.
   3. MAPEI Corporation.
   4. Sienna.
   5. Tec by H.B. Fuller.
   6. Or equal.

C. Sheet Waterproofing for Tile Installation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Noble Company (The); Nobleseal TS. (Basis of Design)
   2. Schluter; KERDI XL.
   3. Or equal.

D. Cementitious Backer Board: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. USG Corporation; DUROCK Cement Board.
   2. National Gypsum Company; PermaBase.
   3. C-Cure; C-Cure Board 990.
   4. Custom Building Products; Wonderboard.
   5. Or equal.

E. Metal Edge Strips and Transitions: Subject to compliance with requirements, provide products by one of the following manufacturers.

1. Schluter Systems (Basis of Design).
2. Blanke.
3. Or equal.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

C. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 TILE PRODUCTS

A. Semi-Gloss Ceramic Wall Tile: Semi Gloss Series.

B. Color: As selected by Architect from manufacturer’s full range.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
   1. Vendor: White Georgia Marble Co.
   2. Description: Match Architect's sample.

2.5 SHEET WATERPROOFING FOR TILE INSTALLATIONS

A. General: Manufacturer's standard product that complies with ANSI A118.10.

B. Thin (1/32 inch) bonded, load bearing sheet membrane for waterproofing. Alloy made from Chlorinated Polyethylene (CPE) with nonwoven fabric laminated to both sides.
   1. System Performance: 1-14 “Extra Heavy Service” cycles per ASTM C627.
   2. Hardness: 82 shore A per ASTM D2240.
   3. Tensile Strength: 1600 psi per ASTM D412 Die C.
   4. Elongation: 44% per ASTM D412 Die C.
   5. Tear Strength: 400 psi per ASTM D624 Die C.
   6. Shear Strength: Pass per ANSI A118.10-1993.
   7. Shear Strength - Water Immersion: Pass per ANSI A118.10-1993.

8. Fungus & microorganism Resistance: Pass per ANSI A118.10-1993.
9. Seam Strength: Pass per ANSI A118.10-1993.
10. Waterproofness: Pass per ANSI A118.10-1993.

C. Product: Ditra XL System by Schluter or equal.
1. Description: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on underside; 5/16-inch nominal thickness.
2. Accessories:
a. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness. Kerdi-Band and Kerdi-Flex by Schluter or equal.

2.6 SETTING AND GROUTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:
1. Prepackaged dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive.
a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
2. Products:
a. MAPEI: Ultraflex 2, Walls: MAPEI Ultralite.
b. 254 Platinum by Laticrete.
c. Custom Building Products: MegaFlex.
d. Or equal.

B. Chemical-Resistant, Water-Cleanable, Grouting Epoxy: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
1. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F and 212 deg F, respectively, and certified by manufacturer for intended use.
2. Products:
a. MAPEI: Kerapoxy IEG.
b. SpectraLock Pro by Laticrete.
c. Custom Building Products: 100% Solids Epoxy Grout.
d. Or equal.

2.7 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section "Joint Sealants."
1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.8 TILE BACKER UNITS

A. Cementitious Back Units:
   1. Aggregated portland cement board with coated glass-mesh reinforcement scrim.
   2. Comply with ANSI A118.9.
   3. Pass ASTM E136 for non-combustibility.
   4. Thickness: As indicated on Drawings.
   5. Lengths: Maximum lengths available to minimize end-to-end butt joints.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.10 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
      a. Sub-floor and Vertical Surfaces: 1/4 inch in 10 feet.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
   1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
   2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Locate joints in tile surfaces directly above joints in concrete substrates.

G. Grout tile to comply with requirements of the following tile installation standards:
   1. For chemical-resistant epoxy grouts, comply with ANSI A108.6.

3.4 CEMENTITIOUS BACKER UNIT INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 WATERPROOFING INSTALLATION

A. Do not install tile over waterproofing until waterproofing has been tested to determine that it is watertight.

3.6 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

B. Joint Widths: 1/16 inch unless specified otherwise.

3.7 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

3.8 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove epoxy grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.9 WALL TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior wall installation over cementitious backer units; thin-set mortar; TCA W244C-07 with epoxy grout and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

3.10 FLOOR TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior floor installation on waterproof membrane over concrete; thin-set mortar; TCNA F122 and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

END OF SECTION 093000

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes acoustical tiles for ceilings and the following:
   1. Direct attachment of tiles to substrates with adhesive.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light-Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For components with factory-applied color finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
   1. Acoustical Tile: Set of full-size Samples of each type, color, pattern, and texture.
   2. Concealed Suspension System Members: 12-inch- long Sample of each type.
   3. Exposed Moldings and Trim: Set of 12-inch- long Samples of each type and color.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical tile ceiling.

E. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:
1. Surface-Burning Characteristics: Provide acoustical tile with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
a. Smoke-Developed Index: 450 or less.
b. Flame-Spread Classification: CBC 802.2 and Table 8-A.
1) Flame-Spread Rating: Class 1 (0-25).

D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand meeting the requirements of ASCE 7 Section 13.5.6.2 as modified by 2019 CBC Section 1617A.1.21.

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical tile ceilings that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acoustical Tiles: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. USG Interiors, Inc. (District Standard)

2.2 ACOUSTICAL TILES, GENERAL

A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
   1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

D. Antimicrobial Fungicide Treatment: Provide acoustical tiles with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

A. Products: Match existing acoustical panels as approved by Architect.

2.4 MISCELLANEOUS MATERIALS

A. Tile Adhesive: Type recommended by tile manufacturer, bearing UL label for Class 0-25 flame spread.
   1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, DIRECTLY ATTACHED ACOUSTICAL TILE CEILINGS

A. Adhesive Installation: Install acoustical tile by bonding to substrate, using amount of adhesive and procedure recommended in writing by tile manufacturer, CISCA Ceiling System Handbook and as follows:
   1. Remove loose dust from backs of tiles by brushing and prime them with a thin coat of adhesive.
   2. Install splines in joints between tiles; maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet and not exceeding 1/4 inch cumulatively.
   3. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.
   4. Do not bend tile during installation. The "spring load" will cause the adhesive to release.

B. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.

C. Arrange directionally patterned acoustical tiles as follows:
   1. As indicated on reflected ceiling plans.

3.4 CLEANING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Luxury Vinyl Tile (LVT).
   2. Resilient wall base and accessories.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for concrete surface testing.
   2. Division 7 Section “Concrete Moisture and Alkalinity Barrier” for concrete surface preparation.

1.3 PERFORMANCE REQUIREMENTS

A. Accessibility Requirements for Resilient Flooring:
   1. Resilient Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include concrete moisture and alkalinity limits.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification:
   1. Full-size units of each color and pattern of resilient floor tile required.
   2. Resilient Wall Base and Accessories: Manufacturer's standard-size Samples, but not less than 12 inches long, of each resilient product color and pattern required.

D. Maintenance Data: For resilient products to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store tiles on flat surfaces.

1.7 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

E. Install resilient products after other finishing operations, including painting, have been completed.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of resilient floor tile that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
   2. Resilient Wall Base and Accessories: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Luxury Vinyl Tile (LVT): Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Mohawk Group. (District Standard)

B. Type TP Resilient Wall Base: Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
   1. Johnsonite. (Basis of Design)
   2. Burke Mercer Flooring Products.
   3. Allstate Rubber.
   4. Armstrong.
   5. Or equal.

2.2 LUXURY VINYL TILE (LVT)

A. Product: Mohawk or equal.
   1. Collection and Style: As indicated on Drawings.
   2. Construction: Commercial luxury vinyl tileclass / ASTM F1700 class III, type B.
   3. Edge profile: square.
   4. Installation: direct glue.
   5. Recommended adhesive: Shaw 4100, s150 or Shaw 4151.
   6. Performance and Testing:
      a. Static load (ASTM F970): Passes (modified), *1000 PSI.
      b. Residual indentation (ASTM F1914): Passes.
      c. Resistance to heat (ASTM F1514): Passes.
      d. Resistance to light (ASTM F1515): Passes.
      e. Resistance to chemicals (ASTM F925): Passes.
      f. Smoke density (ASTM E662, flaming mode): Passes.
      g. Radiant panel (ASTM E648): Passes, class I.

2.3 RESILIENT WALL BASE

A. Product: Type TP Perceptions Resilient Wall Base by Johnsonite or equal.
   1. Manufactured from a proprietary thermoplastic rubber formulation.
   2. Meets performance requirements for ASTM F 1861 Standard Specification for Resilient Wall Base, Type TP, Group 1.
   3. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm2 or greater, Class I.
   4. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class A, Smoke <450.
   5. Thickness: 1/8" (3.2mm).
   6. Style and Colors: As selected by Architect from manufacturer's full range.

2.4 RESILIENT MOLDING ACCESSORY

A. Types:
   1. Reducer strip for resilient floor covering
   2. Joiner for tile and carpet.

B. Material: Rubber.

C. Profile and Dimensions: As indicated.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed resilient tile and as recommended/ required by the manufacturer for warrantee acceptance or provided by resilient tile manufacturer for the type of carpet being installed.
   1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. VCT and Asphalt Tile Adhesives: 50 g/L.
      b. Cove Base Adhesives: 50 g/L.
      c. Rubber Floor Adhesives: 60 g/L.

C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Concrete Substrates:

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Independent moisture and alkalinity testing prior to installation of resilient flooring as specified in Division 7 Section "Concrete Moisture and Alkalinity Testing".
3. Provide barrier as specified in Division 7 Section "Concrete Moisture and Alkalinity Barrier" if test exceed floor covering limits.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
1. Do not install resilient products until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

D. Extend tiles into toe spaces, door reveals, closets, and similar openings.

E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

F. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
   2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.5 RESILIENT ACCESSORY INSTALLATION

A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.6 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.
      a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
   1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
      a. Use commercially available product acceptable to manufacturer.
   2. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 096519

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Surface Preparation.
   2. Field application of paints, stains, varnishes, and other coatings.

1.3 SUBMITTALS

A. Product data - Submit product data sheets for each product.

B. Samples:
   1. Submit two painted samples, illustrating selected colors and textures for each color and systems selected with specified coats cascaded.
   2. Submit on suitable backing, 8x10 inch size.

1.4 QUALITY ASSURANCE

A. Painting Contractor is required to attend a pre-construction meeting with the District prior to commencement of all projects.

1.5 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

C. Environment Requirements:
   1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.
   2. Do not paint when there is a threat of rain within 24 hours or when surface or air temperatures are at or below 40 degrees.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace paint that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

1.8 EXTRA STOCK

A. Minimum 1 gallon each product in original or new 1 gallon cans.
   1. Color spot each lid.
   2. Identify with formula, location, product and date.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paints: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vista Paint. (District Standard)

2.2 PAINTS AND COATINGS

A. Ready mixed, except field-catalyzed coatings.

B. Prepare pigments:
   1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogenous coating.
   2. For good flow and brushing properties.
   3. Capable of drying or curing free of streaks or sags.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Do not proceed unless substrate is suitable.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent
   3. Interior Wood: 15 percent, measured in accordance with ASTMD4442.
   4. Exterior Wood: 15 percent, measured in accordance with ASTMD4442.

3.2 PREPARATION OF SURFACE

A. General:
   1. Clean all exterior walls and surfaces of loose and scaly paint, dirt, dust, chalk, and other foreign matter by water-blasting using care not to damage substrate followed by hand scraping, sanding or wire brushing after surfaces are dry. Mildew must be treated with household bleach solution and rinsed thoroughly.
   2. Patch, caulk, set protruding nails and repair all surfaces and cracks where necessary with suitable patching materials and smooth off to match adjacent surfaces.
   3. Sand Glossy surfaces to dull surface and remove residue.
   4. Remove mildew from affected surfaces with a solution of Tri-Sodium Phosphate and bleach. Rinse with clean water and allow to dry completely.
   5. Existing surfaces to be recoated shall be thoroughly cleaned and de-glossed by sanding or other means prior to priming and painting. Patched and bare areas shall be spot primed with the same primer as specified for new work.
   6. Rusty metal: Scrape, sand or wire wheel, feathering edges to sound coating. Dust surfaces. Topcoat.
   7. Remove soil and body oils completely from surfaces, including handrails, door edges and posts. Treat with Liquid Sandpaper or Dull-N-Bond.
   8. Remove hardware, accessories, plates, fixtures and similar items not to be finished. Reinstall at completion.
   9. Paint edges of sink cut-outs.

B. CMU Surfaces:
   1. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete block surfaces which are to be painted.
   2. Unpainted CMU surfaces shall be cleaned with TSP. Rinse thoroughly. Surface shall be tested for adhesion. Prime as listed in materials section; allow to cure, then perform adhesion test with duct tape.

C. Galvanized Surfaces: Remove all oils and contamination from galvanized surfaces scheduled to be painted by washing with a compliant solvent wash.

D. Ferrous Metal: Remove grease, rust, scale, dirt and dust from ferrous metal surfaces. Primer coat shall be applied not less than 30 minutes, nor more than 3 hours after preparation of surface.

E. Primed Metal: Sand and scrape shop primed metal to remove loose primer and rust. Touch-up bare, abraded and damaged areas with metal primer. Feather edges to make touch-up patches inconspicuous.

F. Wood Surfaces:
1. Remove dust, grit and foreign matter from wood surfaces. Sand surfaces and dust clean. Spot prime knots, pitch streaks and sappy sections with a stain blocking primer where surfaces are to be painted. Fill nail holes, cracks and other defects after priming and spot prime repairs after patching material has fully cured.
2. Wood surfaces with peeling areas are to have edges of broken paint film sanded to a feather edge.
3. Back prime wood trim. Paint tops, bottoms, edges and cut-outs of doors.

G. Plaster Surfaces:
1. Plaster surfaces shall be dry and free from efflorescence, encrustations and foreign matter. Fill cracks, holes and imperfections, smoothing repairs to match adjacent texture. Allow repairs to fully cure before priming.
2. Prime plaster surfaces with specified primer. Caulk all cracks.

H. Gypsum Board: Gypsum board shall be dusted clean and free from encrustations and other foreign matter.

I. Preparation of other surfaces shall be performed following specific recommendations of the coating manufacturer.

3.3 PREVISOUSLY COATED SURFACES

A. Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required per ASTM D4259.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved

E. Sand wood surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust particles just prior to applying next coat.

G. Stipple all edges and corners to conceal brush marks.

H. Paint entire trim element with like color. Painting of faces only is unacceptable. Trim surfaces must be wrapped with the trim color and not "faced off" or "Hollywooded".

I. Doors: Paint entire door unless otherwise noted, including door top and bottom edge surfaces.

J. Tinting: Tint each primer a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint primer to match the color of the finish coat, but provide sufficient differences in shade of primer to distinguish each separate coat.

3.5 PROTECTION

A. Protect work of other trades and items not intended to receive paint. Install "wet paint" signs to protect newly painted surfaces.

3.6 CLEANING

A. Protection - Carefully protect areas where work is in progress from damage.
   1. Provide and spread clean drop cloths when and where required to provide the necessary protection.
   2. Immediately clean-up all accidental spatter, spillage, misplaced paint and restore the affected surface to its original condition.

B. Clean-up:
   1. Clean up debris daily per OSHA requirements.
   2. At completion of work, remove all materials, supplies, debris and rubbish and leave each area in a clean, acceptable condition.
   3. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.7 SURFACES TO BE FINISHED

A. Paint all new work and areas affected by new work, unless noted otherwise.

B. Do not paint or finish the following items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.

C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint shop primed items occurring in finished areas.
   3. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint.
   4. Paint dampers exposed behind louvers, grilles and convector and baseboard cabinets to match face panels.

3.8 PAINT SYSTEMS – EXTERIOR

A. CONCRETE – PLASTER – STUCCO
   1. FLAT: Premium Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 3000 Acribond (100% Acrylic Solid Stain)
      c. Third Coat 3000 Acribond (100% Acrylic Solid Stain)
   2. FLAT ELASTOMERIC: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 500 Solotex Multi-Mil Acrylic Elastomeric
      c. Third Coat 500 Solotex Multi-Mil Acrylic Elastomeric
   3. EGGSHELL ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
   4. SEMI-GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
      c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   5. GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8500 Carefree Gloss (100% Acrylic)
      c. Third Coat 8500 Carefree Gloss (100% Acrylic)

B. METAL: FERROUS (Unprimed)
   1. FLAT: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 2000 Duratone (100% Acrylic)
      c. Third Coat 2000 Duratone (100% Acrylic)
   2. EGGSHELL ENAMEL : Water-based Acrylic : Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat 8300 Carefree Eggshell (100% Acrylic)
   3. EGGSHELL ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
      a. First Coat 9600 Protec Metal Primer
      b. Second Coat 9700 Protec Alkyd Emulsion Satin
      c. Third Coat 9700 Protec Alkyd Emulsion Satin
   4. SEMI-GLOSS ENAMEL: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)

c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)

5. SEMI-GLOSS ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9800 Protec Alkyd Emulsion Semi-Gloss
   c. Third Coat 9800 Protec Alkyd Emulsion Semi-Gloss
6. GLOSS ENAMEL : Water-based Acrylic: Premium Plus Quality
   a. First Coat 9600 Protec Metal Prime
   b. Second Coat 8500 Carefree Gloss (100% Acrylic)
   c. Third Coat 8500 Carefree Gloss (100% Acrylic)
7. GLOSS ENAMEL : Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9900 Protec Alkyd Emulsion Gloss
   c. Third Coat 9900 Protec Alkyd Emulsion Gloss

C. METAL: NON-FERROUS (Unprimed)
1. FLAT: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 2000 Duratone (100% Acrylic)
   d. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   d. Third Coat 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   d. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8500 Carefree Gloss (100% Acrylic)
   d. Third Coat 8500 Carefree Gloss (100% Acrylic)

D. WOOD
1. FLAT: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 2000 Duratone (100% Acrylic)
   c. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS ENAMEL: Premium Plus Quality

a. First Coat 4200 Terminator II (100% Acrylic Primer)
b. Second Coat 8500 Carefree Gloss (100% Acrylic)
c. Third Coat 8500 Carefree Gloss (100% Acrylic)

E. CONCRETE – ASPHALT – LINE STRIPING
1. FLAT:
a. First Coat 6700 ON-LINE Flat Traffic Marking Paint
b. Second Coat 6700 ON-LINE Flat Traffic Marking Paint
2. SEMI-GLOSS ENAMEL:
a. First Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
b. Second Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
3. FLAT W/ REFLECTIVE BEADS: QUICK-DRY
a. First Coat 6900 ON-LINE Flat QD Traffic Marking Paint
b. Second Coat 6900 ON-LINE Flat QD Traffic Marking Paint

3.9 PAINT SYSTEMS – INTERIOR (Premium Low or Zero VOC)

A. Gypsum Board Surfaces (Drywall) Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

B. Gypsum Board Surfaces (Drywall) 100% Acrylic Low-Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

C. Gypsum Board Surfaces (Drywall) 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

D. Gypsum Board Surfaces (Drywall) 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

E. Concrete, Plaster, Masonry – Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

F. Concrete, Plaster, Masonry – 100% Acrylic Low Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

G. Concrete, Plaster, Masonry – 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer

2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

H. Concrete, Plaster, Masonry – 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

I. Concrete Masonry Unit (CMU) Acrylic Flat Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

J. Concrete Masonry Unit (CMU) 100% Acrylic Low Sheen Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

K. Concrete Masonry Unit (CMU) 100% Acrylic Eggshell Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

L. Concrete Masonry Unit (CMU) 100% Acrylic Semi-Gloss Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

M. Wood – 100% Acrylic Low-Sheen Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

N. Wood – 100% Acrylic Eggshell Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

O. Wood – 100% Acrylic Semi-Gloss Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

P. Metal: Ferrous – Water Base Alkyd Semi-Gloss Finish
1. First Coat: 9600 Protec Alkyd Emulsion Metal Primer
2. Second Coat: 9800 Protec Semi-Gloss Finish
3. Third Coat: 9800 Protec Semi-Gloss Finish

Q. Metal: Non-Ferrous (Galvanized) Water Base Alkyd Semi-Gloss Finish
1. Pretreatment: Krud Kutter Metal Clean and Etch

2. First Coat: 4800 Metal Pro Acrylic Metal Primer
3. Second Coat: 9800 Protec Semi-Gloss Finish
4. Third Coat: 9800 Protec Semi-Gloss Finish

3.10 COLORS

A. To be selected by Architect from manufacturer's full range of colors.

END OF SECTION 099100

DIVISION 10

SPECIALTIES

SECTION 101100 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Markerboards.
   2. Tackboards.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Show location of panel joints.
   2. Show location of special-purpose graphics for visual display surfaces.
   3. Include sections of typical trim members.

C. Schedule: List product, size, and type by room numbers.

D. Samples for Initial Selection: For each type of visual display surface indicated and as follows:
   1. Actual sections of face sheet and tack assembly.
   2. Samples of accessories involving color selection.

E. Samples for Verification: For each type of visual display surface indicated and as follows:
   1. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
   2. Trim: 6-inch- long sections of each trim profile.
   3. Accessories: Full-size Sample of each type of accessory.

F. Maintenance Data: For visual display surfaces to include in maintenance manuals.

G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of visual display surfaces and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

B. Fire-Test-Response Characteristics: Provide fabrics with the surface-burning characteristics indicated, as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-built visual display boards, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store visual display units vertically with packing materials between each unit.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating visual display surfaces without field measurements. Coordinate wall construction to ensure that actual dimensions correspond to established dimensions.
   2. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.7 WARRANTY

A. Special Warranty for Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace face sheets that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Surfaces lose original writing and erasing qualities.
      b. Surfaces become slick or shiny.
      c. Surfaces exhibit crazing, cracking, or flaking.
   2. Warranty Period: Life of the building.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Markerboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. LCS Markerboard by Claridge Products & Equipment, Inc. (Basis of Design).
   2. 555 Series, P3 ceramic steel by Polyvision Corporation.
   3. Magnaboard by Chatfield Clarke Co.
   4. Modular Trim System by Platinum Visual Systems.
   5. A-1 Visual Systems.
   6. Best-Rite.
   7. Or equal.

B. Tackboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Koroseal. (District Standard)

2.2 MARKERBOARDS

A. Product: Markerboard by Claridge Products & Equipment, Inc.
   1. Face Sheet: 24 gauge, white.
      a. LCS-II, 75 low gloss; dry-erase markers wipe clean with dry cloth or standard eraser. Suitable for use as projection screen.
   2. Core Material: 7/16” MDF unless fire retardant materials are required, then provide 7/16 inch Duracore.
   3. Panel Backing: Moisture barrier back; 0.002” Aluminum Foil Panel.
   4. Metal Frame/Trim: Series #4, 5/8 inch trim face.
      a. Extruded aluminum, alloy 6063, clear anodized finish.
      b. Trim for three sides: Side trim with narrow leg exposed and mitered at corners.
      c. Chalk trough: Outer end corners rounded to approximately 1-1/2 inches radius.
   5. Size: As indicated on Drawings.
   6. Maprail: 74EZ, 2 inch.

2.3 TACK BOARD

A. Product: tac•wall by Koroseal or equal.
   1. Description: Resilient, tackable, linoleum surface material. Uni-color resilient homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing.
   2. Width: 48 inch.
   3. Gauge: 1/4 inch.
   4. Roll: Approximately ± 95 lineal foot rolls.
   5. Flexible enough to bend around a 2-3/4 inch radius.
   6. Dimensionally stable due to burlap backing.
   7. Meets California Indoor Air Quality Specifications 01350.
   8. Color: Color shall extend through thickness of material.

a. As selected by Architect from manufacturer's full range.
9. Size: As indicated on Drawings.

B. Aluminum Trim: 1/4 inch clear satin, anodized aluminum.
1. 5/16 inch face J Trim.
2. 1/2 inch face H Trim.
3. 5/16 inch face Outside Trim.
4. 5/16 inch face Inside Trim

C. Accessories:
1. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) or polyvinyl acetate dispersion type (contact adhesive) when used in a press.
2. Caulk: Color matched to tackable wall.

2.4 ACCESSORIES

A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- thick, extruded aluminum; of size and shape indicated.
1. Factory-Applied Trim: Manufacturer's standard.

B. Chalktray: Manufacturer's standard, continuous.
1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.

C. Map Rail: Provide the following accessories:
1. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches wide.
2. End Stops: Located at each end of map rail.
3. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches of map rail or fraction thereof.
4. Flag Holder: One for each room.

2.5 FABRICATION

A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.

B. Visual Display Boards: Factory assemble visual display boards, unless otherwise indicated.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.

3. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

D. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to neat, hairline closure.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.6 ALUMINUM FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

D. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Examine walls and partitions for proper backing for visual display surfaces.

C. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.

B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.

3.3 INSTALLATION, GENERAL

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation. Units shall be braced in place to allow curing of adhesive. There shall be no gaps or voids in adhesion and units shall not give when pushed.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

A. Visual Display Boards: Visual Display Boards shall be attached to the wall by spreading adhesive over the entire back of the panel with 1/4 inch notched trowel. Panels shall be braced to provide thorough adhesion to the substrate, and shall exhibit no “sponginess” when pressed.

3.5 CLEANING AND PROTECTION

A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 101100

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Panel signs (room signs).
2. Parking signs.
3. Traffic signs.
4. Exterior building signs.
5. Signage accessories.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
1. Raised characters shall comply with CBC Section 11B-703.2.:
   a. Depth: It shall be 1/32 inch (0.8 mm) minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
   b. Height: It shall be 5/8 inch (15.9 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter “I”. CBC Section 11B-703.2.5.
   c. Finish and contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1
   d. Proportions: It shall be selected from fonts where the width of the uppercase letter “O” is 60 % minimum and 110 % maximum of the height of the uppercase letter “I”. Stroke thickness of the uppercase letter “I” shall be 15 % maximum of the height of the character. CBC Sections 11B-703.2.4.
   e. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8.
   f. Braille: It shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4. Braille dots shall have a domed and rounded shape and shall comply with CBC Table and Figure 11B-703.3.1.
   g. Mounting height: A tactile sign shall be located 48” minimum to the baseline of the lowest Braille cells and 60” maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
   h. Mounting location: A tactile sign shall be located on the approach side, as one enters or exits rooms or space, and be reached within 0” of the required clear floor space per CBC Section and Figure 11B -703.4.2 as follows:

1) a clear floor space of 18’ x 18” minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
2) on the wall at the latch side of a single door.
3) on the inactive leaf of a double door with one active leaf.
4) on the wall at the right side of a double door with two active leafs.
5) on the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leafs.

2. Visual characters shall comply with CBC Section 11B-703.5 and shall be 40” minimum above finish floor or ground.
3. Pictograms shall comply with CBC Section 11B-703.6.
4. Symbol of accessibility shall comply with CBC Section 11B-703.7.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
1. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.

D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:
1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will not be returned for installation into Project.

E. Qualification Data: For Installer.

F. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.

B. Source Limitations: Obtain each sign type through one source from a single manufacturer.

C. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

D. All tactile signage must be field inspected after installation per CBC 11B-703.1.1.2.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
   1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signage fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Best Sign Systems Inc. (Basis of Design)
   2. Apco Graphics Inc.
   3. ASI Sign Systems, Inc.
   4. Curcio Enterprises, Inc.
   5. Mohawk Sign Systems.
   6. Sign A Rama.
   7. Or equal.

B. Exterior Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Gemini, Inc. (Basis of Design)
   2. A.R.K. Ramos Mfg. Co., Inc.
   3. La Haye Bronze.
   4. Metal Arts; Division of L & H Mfg.
   5. Mills Manufacturing. Inc.
   6. Southwell Co.
   7. Or equal.

2.2 PANEL ROOM SIGNS

A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
   1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.

B. Product: HC300 ADA Sign System by Best Sign Systems.
   1. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished.
   2. No Smoking signs.
   3. Room, Occupancy, Wayfinding Signs: As selected from 4 standard copy size signs.
      a. 4" x 2" with up to 4 characters each.
      b. 6" x 2" with up to 8 characters each.
      c. 8" x 2" with up to 12 characters each.
      d. 10" x 2" with up to 14 characters each.
   4. Toilet Room Signs: As selected from manufacturer's standard.
   5. Symbols of Accessibility: Provide 6-inch- high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.
   6. Material:
      a. 1/4 inch thick (thicker than standard) "MP", acrylic sheet, ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
   7. Copy: Contracted grade 2 Braille all capital letter on tactile sign.
      a. Font and Size: As indicated on Drawings.

2.3 PARKING/TRAFFIC SIGNS

A. Material: 0.080" porcelain-enameled aluminum unframed signs, screen printed copy.

B. Accessible signs are blue with white symbol.
   1. Text: Symbols of accessibility, accessible direction, etc. as indicated on Drawings.
   2. Text: Stop, Yield, Do Not Enter, etc. as indicated on Drawings.

C. Post: 2 inch diameter, schedule 40 galvanized pipe.

2.4 EXTERIOR BUILDING SIGN

A. Cast metal letters: Melted metal alloy poured into a mold. The backside is hollow.

B. Size and letters: As indicated on Drawings.

2.5 ACCESSORIES

A. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
   2. Signs placed on glazed surfaces, backing sign of the same material and color shall be applied on the opposite glazed surface.

B. Wall-Mounted Panel Signs:
   1. Interior Signs on Smooth Substrates:
      a. Silicone-Adhesive Mounting: Use liquid-silicone adhesive recommended in writing by sign manufacturer to attach signs to irregular, porous, or vinyl-covered surfaces.

Use double-sided vinyl tape where recommended in writing by sign manufacturer to hold sign in place until adhesive has fully cured.

2. Exterior and Interior Signs on Rough Substrates:
   a. Mechanical Fasteners: Mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
      1) Fastener: Stainless steel screws, tamper-resistant flat head countersink.
      2) Anchors: Suitable for secure attachment to substrate.

C. Parking and Traffic Signs
   1. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
   2. Install sign level, plumb, and at height indicated.
   3. Cap post with galvanized cap.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by District.

END OF SECTION 101400

SECTION 102800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Toilet accessories.

B. Owner-Furnished Contractor Install Materials: As indicated on Drawings.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Elements of Sanitary facilities shall be mounted at locations in compliance with CBC Sections 11B-602 through 11B-612.
   2. Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609.
   3. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follows:
      a. 1-1/2” between the grab bar and the wall.
      b. 1-1/2” minimum between the grab bar and projecting objects below and at the ends.
      c. 12” minimum between the grab bar and projecting objects above.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated on Drawings.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in California Electrical Code, NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace toilet and bath accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Toilet and Bath Accessories: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Bobrick Washroom Equipment, Inc. (District Standard)

B. Underlavatory Guards: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Handy-Shield by Plumberex Specialty Products, Inc. (Basis of Design)
   2. IPS Corp.
   3. TCI Products.
   4. Truebro, Inc.
   5. Or equal.

2.2 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.

C. Galvanized Steel Sheet: ASTM A 653, with G60 hot-dip zinc coating.

D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.3 TOILET ACCESSORIES

A. As indicated on Drawings.

2.4 UNDERLAVATORY GUARDS

A. Product: Handy-Shield Maxx by Plumberex Specialty Products, Inc. or equal.
   1. Description: Insulating pipe covering for supply and drain piping assemblies, that prevent direct contact with and burns from piping, and allow service access without removing coverings.
   2. PVC insulator shall be 1/8" thick.
   3. Meets Testing Standard ASTM E 84-07 per CBC Chapter 8.
      a. 25 flame spread.
      b. 450 smoke index.
   4. Surfaces to be soft, smooth, non-absorbent, easy to clean U/V inhibited, antimicrobial, antifungal properties.
   5. Insulator shall have a dual fastening system which consists of fusion bonded Velcro fastener strips for full slit enclosure and tamper resistant, smooth, non-abrasive snap-locking fasteners.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate OFCI items with District.

B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

C. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 104400 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable fire extinguishers.
   2. Fire-protection cabinets for the following:
      a. Portable fire extinguishers.
   3. Mounting brackets for fire extinguishers.

1.3 SYSTEM DESCRIPTION

A. Fire Extinguisher Cabinets:
   1. Fire Extinguisher Cabinets must comply with CBC Sections11B-305, 11B-307, 11B-308, and 11B-309.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.
   1. Fire Extinguishers: Include rating and classification.
   2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Samples for Initial Selection: For fire-protection cabinets with factory-applied color finishes.

C. Samples for Verification: For each type of exposed factory-applied color finish required for fire-protection cabinets, prepared on Samples of size indicated below.
   1. Size: 6 by 6 inches square.

D. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10-1998 Edition, "Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
   1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure of hydrostatic test according to NFPA 10.
      b. Faulty operation of valves or release levers.
   2. Warranty Period: 6 years.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fire Extinguishers and Cabinets: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. JL Industries, Inc. (Basis of Design)
   2. Larsen's Manufacturing Company.
   3. Potter Roemer; Div. of Smith Industries, Inc.
   4. Ansul.
   5. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B.

B. Stainless-Steel Sheet: ASTM A 666, Type 304.

C. Tempered Break Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick minimum.

2.3 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
   1. Valves: Manufacturer's standard.
   2. Handles and Levers: Manufacturer's standard.
   3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
   4. Certification Tag: Provide fire extinguisher with valid certification test tag where fire extinguishers are fully charged and ready to be used.

B. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-10B:C, UL rated.
   2. Nominal Capacity: Provide largest capacity fire extinguisher that will fit in the cabinet, but 5 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: General purpose.

C. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-20B:C.
   2. Nominal Capacity: Provide largest capacity fire extinguisher but 10 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: At mechanical rooms and where indicated.

D. Wet Chemical Type: Cast steel tank, pressurized, including hose and nozzle, with bracket.
   1. Class 2A-K.
   2. Size 2.5 gal.
   3. Finish: Factory baked enamel, red color.
   4. Use: At kitchens.

2.4 FIRE-PROTECTION CABINET

A. Product: Cosmopolitan series - stainless steel fire extinguisher cabinet by JL.
   1. Door and Trim Construction: No. 4 stainless steel. Flush cabinet doors with a 5/8" door stop are attached by a continuous hinge and equipped with zinc-plated handle and roller catch.
   2. Trim Style and Depth: Provide semi-recessed where recessed can’t be provided.
      a. Recessed: 3/8" flat trim.
      b. Semi-Recessed: 1-1/4", 1-1/2" Square Edge or 2-1/2", 3", 4" (recessed pull), 4-1/2" Rolled Edge.
   3. Finish: #4 Stainless Steel.
   4. Tub: Constructed of cold rolled steel with white powder-coat finish standard. Surface mount tubs are No 4 stainless.
   5. Fire-Rated: At fire-rated assembly.
   6. Door Styles: View Door Styles at Right.
   7. Door Glazing: Tempered Glass.

2.5 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   1. Color: Red.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter.
      a. Orientation: Vertical.

2.6 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
   1. Weld joints and grind smooth.
   2. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material.
      a. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
   1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
   2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 STAINLESS-STEEL FINISHES

A. General: Remove tool and die marks and stretch lines or blend into finish.
   1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Bright, Directional Polish: No. 4 finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where cabinets will be installed.

B. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged units.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for recessed and semi-recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights indicated on Drawings.

B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
   1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire-protection cabinets.
   2. Provide inside latch and lock for break-glass panels.
   3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104400

DIVISION 11
EQUIPMENT

SECTION 115217 - ASSISTIVE LISTENING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable listening system.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Assistive-listening systems shall be provided in accordance with CBC Section 11B-219 and shall comply with CBC Section 11B-706.
   2. The minimum number of receivers to be provided shall be equal to 4% of the total number of seats, but in no case less than two. 25 % minimum of the receivers provided, but no less than two, shall be hearing-aid compatible in accordance with CBC Section 11B-706.3.
   3. If the system provided is limited to specific areas or seats, then such areas or seats shall be within a 50-foot viewing distance of, and have a complete view of, the stage or playing area. CBC Section 11B-219.4.
   4. Provide system with standard mono jacks; hearing aid compatible receivers with neckloop; sound pressure level 110 dB min to 118 dB max, volume control 50dB; signal-to-noise ratio min; peak clipping level max relative to peaks of speech per CBC 11B-706.

1.4 SUBMITTALS

A. Product Data: For portable listening system.

B. User manual: For transmitters and receivers.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain portable listening devices through one source from a single manufacturer.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of assistive listening devices that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Portable Listening System: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Williams Sound. (Basis of Design)
   2. Telex.
   3. Listen Technologies.
   4. Chaparral.
   5. Or equal.

2.2 PORTABLE LISTENING SYSTEM

A. Product: FM ADA Kit 37 FM ADA Compliance Kit by Williams Sound or equal.
   1. Transmitter:
      a. Battery powered and capable of being worn, 60 hours of operation with alkaline batteries, 30 hours with rechargable batteries
      b. 16 selectable channels on FM frequencies between 72 and 76 MHz
      c. Frequency Response: 200Hz to 13kHz
      d. Connector: 3.5mm accepts input from microphone and line level signals
      e. Controls: On/Off, Volume, Mute button with indicator, Channel selector
      f. Internal compression to reduce peak distortion and noise
   2. Receivers:
      a. Battery powered and capable of being worn, 50 hours of operation with alkaline batteries, 32 hours with rechargable batteries.
         1) Enters sleep mode if no RF signal detected for 6 minutes
      b. Channels: 17 between 72 and 76 MHz
         1) Unit shall have ability to lock channel to prevent accidental change of channel
      c. Deviation: 75kHz
      d. De-Emphasis: 75µS
      e. Range: AFC Range ±120kHz
      f. Sensitivity: 2µV @ 12dB Sinad with Squelch Defeated
      g. Max Input Signal: 100mV
      h. Frequency Response 200Hz - 15kHz
      i. Modulation FM, ±75kHz Peak Deviation
      j. Signal to Noise Ratio 65dB Min @ 100µV
      k. Output Level 35mW Max, Peak into 16 Ohms
      l. Connectors 3.5mm Stereo/Mono Headphone Jack
   3. Headphones: Heavy duty, folding, mono.

a. Drivers 1.6" (40 mm)
b. Plug 3.5 mm mono
c. Cord 39" (99 cm)
d. Nominal Impedance 16 Ohms
e. Frequency Response 20 Hz - 20 kHz
f. Maximum Input 100 mW
g. Sensitivity 96 dB @ 1 kHz

4. Lapel Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
5. Desktop Conference Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
6. Neckloops: designed to magnetically couple an audio signal to a telephone coil-equipped (T-Switch) hearing aid.
   a. Magnetic Field Strength: 25 mW input at 1000 Hz produces 1.7 A/m 6" above the center of loop 85µW input produces 0.1 A/m (IEC Standard)
   b. Input Power: 500 mW max
   c. Impedance 8 to 16 Ohms
   d. Connector: 3.5 mm mono mini-plug
7. System Carry Case: Heavy-duty carrying case lined with foam and capable of containing entire system.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Store portable listening system as directed by District.

3.2 DEMONSTRATION

A. Engage a factory-authorized service representative to train District's maintenance personnel to adjust, operate, and maintain portable listening system. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION 115217

DIVISION 12

FURNISHINGS

SECTION 122116 - VERTICAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Vertical louver blinds.

1.3 PERFORMANCE REQUIREMENTS

A. Operable parts and controls at unobstructed forward and side approach locate at 48" to top of device. For reach requirements at other conditions, comply with 11B-308 as they apply. Operable parts shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist and shall have a maximum operable force of 5 pounds. Operable parts shall also comply with CBC sections 11B 308.2, 11B 308.3. and 11B-309.4.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for vertical louver blinds.

C. Samples for Initial Selection: For each type of vertical louver blind indicated.
   1. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For each type of vertical louver blind indicated.
   1. Vane: Not less than 12 inches long.
   2. Vertical Louver Blind: Full-size unit, not less than 16 inches wide by 24 inches long.

E. Window Treatment Schedule: For vertical louver blinds. Use same designations indicated on Drawings.

F. Product Certificates: For each type of vertical louver blind, signed by product manufacturer.

G. Maintenance Data: For vertical louver blinds to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain vertical louver blinds through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide vertical louver blinds with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Flame-Resistance Ratings: Passes NFPA 701.

C. Product Standard: Provide vertical louver blinds complying with WCSC A 100.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver vertical louver blinds in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install vertical louver blinds until construction and wet and dirty finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where vertical louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of vertical louver blinds that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Vertical Louver Blinds: Before installation begins, for each size, color, texture, pattern, and gloss indicated, full-size units equal to 5 percent of amount installed, but no fewer than 2 units.
2. Vanes: Before installation begins, furnish quantity of full-size units equal to 5 percent of amount of each type, color, and size installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Vertical Louver Blinds:
1. Hunter Douglas.
2. Levolor, a Newell Rubbermaid Company.
3. Or equal.

2.2 VERTICAL LOUVER BLINDS, ALUMINUM VANES

A. Rail System: Headrail.
1. Rails: Extruded aluminum; long edges returned or rolled; channel-shaped, enclosing operating mechanisms.
   a. Anodized aluminum, clear anodized.
2. Wheeled Carriers: Engineered plastic with self-lubricating wheels.

B. Vanes: Aluminum, alloy, and temper recommended by producer for type of use and finish indicated; with crowned profile and not less than 3/8-inch overlap when vanes are rotated fully closed.
1. Nominal Vane Width: 3-1/2 inches wide.
2. Vane Finish: One color as indicated.

C. Vane Directional Control: Manual with nickel-plated metal bead chain.

D. Traversing Control: Manual with nickel-plated metal bead chain.

E. Louver Bottom: Connecting or spacing chains.

F. Mounting: As indicated on Drawings.

G. Stack Release: Permitting stacked vanes to be moved away from stacking position for total access to glazed opening.

H. Colors, Textures, Patterns, and Gloss: As selected by Architect from manufacturer's full range.

2.3 VERTICAL LOUVER BLIND FABRICATION

A. Product Description: Vertical louver blind consisting of equally spaced, synchronized vanes and rail system with self-aligning carrier mechanisms, carriers, traverse and vane directional mechanisms and controls, and installation hardware.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.
   1. Louver Directional and Traversing Control Mechanisms: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:
   1. Blind Units Installed between (inside) Jambs: Width equal to 1/4 inch per side or 1/2 inch total less than jamb-to-jamb dimension of opening in which each blind is installed. Length equal to 1/4 inch, plus or minus 1/8 inch, less than head-to-sill dimension of opening in which each blind is installed.

D. Installation Brackets: Designed for easy removal and reinstallation of blind, for supporting headrail and operating hardware, and for hardware position and blind mounting method indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to blind hardware and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, unless anodized or plated finish is indicated. Apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install vertical louver blinds level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior vane edges in any position are not closer than 2 inches to interior face of glass. Install intermediate support as required to prevent deflection in headrail. Allow clearances between adjacent blinds and for operating glazed opening's operation hardware, if any.

3.3 ADJUSTING

A. Adjust vertical louver blinds to operate smoothly, easily, safely and free of binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean vertical louver blind surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that vertical louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged vertical louver blinds that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122116

SECTION 126815 – FOLDING TABLES AND BENCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding table and bench seats.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Provide folding tables and bench seats with integral wall pockets with unitized understructure not requiring the tops of benches for operation.

B. Performance Requirements: Bench undercarriage shall be able to support 200 lbs. at any point when top panels are removed.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.
   1. Supply information for each type of on-wall or in-wall table/seating system specified, including detail of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Maintenance data for built-in table/seating systems, including a detailed operation and maintenance manual.

C. Shop Drawings: Show fabrication and installation of built-in table/seating, including plans, elevations, sections, details of components, profiles and finishes.

D. Samples:
   1. For initial selection in the form of manufacturer's color charts consisting of actual units or sections of the units showing the full range of colors, textures and patterns available for each exposed material involving color selection.
   2. For verification of the following items, provide samples from the same material to be used for the work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
      a. High-pressure plastic laminate.

E. Quality Assurance/Control Submittals: Submit the following:

1. Certificates: Manufacturer certification of qualifications of firms or persons specified in the "Quality Assurance" article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses of Architects and Owners as well as other information specified.

F. Closeout Submittals: Submit the following:
1. Warranty documents specified herein.

1.5 QUALITY ASSURANCE

A. Qualifications:
1. Installer Qualifications: Engage an experienced installer who has specialized in installing built-in tables and seating similar to those required for this project and who is acceptable to and certified by the manufacturer of the built-in table/seating system to perform the work of this section.
2. Welder Qualifications: Engage certified welders that have satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, have undergone recertification.

1.6 DELIVERY, STORAGE & HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature/ humidity conditions recommended by the manufacturer.

1.7 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.
1. Warranty Coverage: To include replacement or repair of any defect in the original material and workmanship, including welds, pockets, tables and benches.
2. Warranty Period: 15 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wall-Mounted Tables and Benches:
1. Mitchell Furniture Systems.(Basis of Design)
2. Palmer Hamilton

3. Biofit Engineered Products.
4. Sico.
5. Or equal.

2.2 WALL-MOUNTED TALBES AND BENCHES

A. Wall-mounted tables and benches by Mitchell or equal.
1. Model: D-08-13-2812-S.
2. Description: Double-depth in-wall, recessed mounted pockets.
3. 13’ L x 28 inches W x 29 inches H tables per in-wall pocket unit.
4. Quantity: As indicated on Drawings.
5. Top Surface: Wilsonart Laminate.
   a. Color as selected by Architect.
6. Edge Color: Black.
7. Finish: Power coat, jet black.
8. ADA seating where required.

2.3 FABRICATION

A. Comply with applicable provisions of AWS D1.1 and AWS D1.3.

PART 3 - EXECUTION

3.1 MANUFACTURER’S INSTRUCTIONS

A. Comply with the instructions and recommendations of the bench and table manufacturer.

3.2 EXAMINATION

A. Site Verification of Conditions:
1. With general contractor present, examine area where built-in tables and seating are to be installed.
2. Ensure compliance with installation tolerance requirements and other conditions affecting performance of built-in tables and seating.
3. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Protection: Protect previously installed finish materials from damage during installation of benches and tables.

B. Preparation: Make actual field measurements of construction affecting built-in tables and seating prior to fabrication and show record measurements on-shop drawings.

3.4 INSTALLATION

A. Installation must be done over a level surface with no more than a .125" (3 mm) change in height over a 10' (3 m) area.

B. Install built-in tables and seating to comply with manufacturer's instructions, shop drawings and specifications.

C. Provide accessories indicated, including anchors, fasteners, inserts, and other hardware required for installing and attaching units to adjoining construction.

D. Secure sill level on floor with flat-head screws through each hole provided by the manufacturer using lead or patent type anchors for screws in concrete floors. Install screw heads flush with sill.

E. Seven-foot center-to-center pocket mounting distance is the suggested minimum for 26" (660 mm) aisles between table/bench seats.

F. Height of finished floor must be within .0625" (1.5mm) of top of pocket sill plate. Rough floor to wall must be perpendicular in pocket mounting area.

3.5 ADJUSTING

A. Touch up shop applied finishes to restore damaged or soiled areas.

B. Lubricate, test and adjust each built-in table and seating unit to operate easily/comply with manufacturer's

3.6 CLEANING

A. After installation/adjustment: clean exposed and partially exposed surfaces on each installed built-in table, seating unit, and wall pocket. Use materials and methods recommended by manufacturer.

3.7 DEMONSTRATION

A. Demonstrate and train owner's maintenance personnel on procedures and schedules related to operation, troubleshooting, servicing, inspection, and maintenance.

3.8 PROTECTION

A. Protect installed built-in tables and seating units from damage during subsequent construction.

B. Ensures table and seating units are without damage or deterioration at the time of substantial completion.

END OF SECTION 126815

DIVISION 22

PLUMBING

SECTION 22 05 18- ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this

and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.13 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated and rough-brass finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Chrome-Plated Piping: One-piece, cast-brass type with polished, chrome-plated finish.
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
e. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.
f. Bare Piping in Equipment Rooms: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 22 05 18

SECTION 22 05 23- GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Bronze ball valves.
2. Ductile-iron, single-flange butterfly valves.
3. Bronze lift check valves.
4. Bronze swing check valves.
5. Bronze gate valves.
6. Iron gate valves
7. Manual circuit balancing valves.
8. Gas shut-off cocks.
9. LPG shut-off cocks.

B. Related Sections:

1. Division 2 water distribution piping Sections for general-duty and specialty valves for site construction piping.
2. Division 15 plumbing piping Sections for specialty valves applicable to those Sections only.
3. Division 15 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene diene terpolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Nonrising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

G. SWP: Steam working pressure.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be

neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61-G and NSF-372 for valve materials for potable-water service.

1. Valves for domestic water must comply with the Federal Reduction of Lead in Drinking Water Act.
   a. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%.
   b. All valves must be 3rd party certified.
   c. Bronze valves shall be made of dezincification-resistant material.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set angle, gate, and globe valves closed to prevent rattling.
4. Set ball and plug valves open to minimize exposure of functional surfaces.
5. Set butterfly valves closed or slightly open.
6. Block check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and

sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Piping systems shall be supplied with valves arranged so as to give complete and regulating control of each building and piping systems throughout the building, and located so all parts are easily accessible and maintained.

1. Valve Design: Rising stem or outside screw and yoke stems. Non-rising stem valves may be used where space conditions prevent full extension of rising stems.
2. Sizes: Same size as upstream pipe, unless otherwise indicated.
3. Extended stems: Where piping insulation is indicated or specified, valves shall be equipped with 2” extended handles of non-thermal conductive material. Also provide a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Supply with memory stops, which are fully adjustable after insulation is applied.
4. End Connection: 2 inch and under shall be threaded, 2-1/2 inches and larger shall be flanged or full lug style.

C. Valves for Potable Water must comply with California Lead Free Law, effective January 1, 2010.

1. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%. Source: California Health & Safety Code (116875).
2. All valves must be 3rd party certified.
3. Bronze valves shall be made with dezincification-resistant material.

D. Where possible, valves of one manufacturer shall be used.

E. Provide Class 150 valves meeting the valve specifications where Class 125 valves are specified but are not available.

F. Bronze valves shall be made with dezincification-resistant materials, (Bronze ASTM B62, B61, or B584 Alloy C87850). This includes body, ball, stem and / or trim.

G. Bronze Valves: NPS 2 and smaller with threaded ends, unless otherwise indicated.

H. Ferrous Valves: NPS 2-1/2 and larger with flanged ends, unless otherwise indicated.

I. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

J. Valve Sizes: Same as upstream piping unless otherwise indicated.

K. Valve Actuator Types:

1. Hand-wheel: For valves other than quarter-turn types.
2. Hand-lever: For quarter-turn valves NPS 6 and smaller.

L. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.

a. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Nib-seal handle extension or comparable product by one of the following:

b. General valves:

1) NIBCO
2) Hammond
3) Milwaukee

c. Below grade domestic water shut-off valves (gate valves) 2" and larger:

1) NIBCO.
2) Clow.
3) Mueller.

d. Butterfly Valves:

1) NIBCO.
2) Demco.
3) Dezuric.

e. Plug Valves:

1) Hammond.
2) Milwaukee.

f. Check valves, lift type:

1) Hammond.
2) Milwaukee.

g. Below grade backwater valve isolation valves:

1) NIBCO.
2) Clow.
3) Mueller.

2. Butterfly Valves: With extended neck.

M. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
2. Grooved: With grooves according to AWWA C606.
3. Solder Joint: With sockets according to ASME B16.18.
4. Threaded: With threads according to ASME B1.20.1.

N. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES

A. Three-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-595-Y-66-LF or T-595-Y-66-LF or a comparable product by one of the following,

a. Milwaukee Valve Company.
b. Apollo.

2. Description:

c. Standard: MSS SP-110, NSF 61-G.
d. CWP Rating: 600 psig.
e. Body Design: Three piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
f. Body Material: Bronze ASTM B 584 Alloy C87850 or C87600.

g. Ends: Threaded or Solder.
h. Seats: PTFE or TFE.
i. Stem: 316 Stainless steel.
j. Ball: 316 Stainless steel, vented.
k. Port: Full.

B. Two-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-585-66-LF or T-585-66-LF or a comparable product by one of the following:

a. Conbraco Industries, Inc.; Apollo Div.
b. Milwaukee Valve Company.

2. Description:

a. Standard: MSS SP-110, NSF 61-G.
b. CWP Rating: 600 psig.
c. Body Design: Two piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
d. Body Material: Bronze ASTM B 584 Alloy C87600.
e. Ends: Threaded or Solder.
f. Seats: PTFE or TFE.
g. Stem: 316 Stainless steel.
h. Ball: 316 Stainless steel, vented.
i. Port: Full.

C. 200 CWP, Sizes 2-1/2" – 24", Ductile Iron, Single-Flange Butterfly Valves with EPDM Seat and Aluminum-Bronze Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model LD-2000-3/5, or a comparable product by one of the following:

a. Cooper Cameron Corp.; Cooper Cameron Valves Div.
b. Tyco International, Ltd.; Tyco Valves & Controls

2. Description:

a. Standard: MSS SP-67, Type I, IAPMO.
b. NPS 24 (DN 300) and Smaller CWP Rating: 200 psig (1380 kPa).
c. Body Design: Full Lug type; Bubble tight shutoff, suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: ASTM A 536, ductile iron.
e. Seat: EPDM.
f. Stem: One- or two-piece stainless steel.
g. Disc: Aluminum bronze

D. Retain one or more of six paragraphs in this article if iron, single-flange butterfly valves are required. MSS SP-67 covers iron, single-flange butterfly valves NPS 1-1/2 to NPS 72.

2.3 BRONZE LIFT CHECK VALVES

A. Class 125, Lift Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-480-Y-LF or T-480-Y-LF or a comparable product by one of the following:

a. Hammond.
b. Milwaukee.

2. Description:

a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Vertical flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE, or TFE.

2.4 BRONZE SWING CHECK VALVES

A. Class 125, Bronze Swing Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-413-Y-LF or T-413-Y-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-80, Type 4, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Y-pattern Horizontal flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE or TFE.

2.5 BRONZE GATE VALVES

A. NRS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-113-LF or T-113-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-139, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B 584, dezincification-resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free Silicon Bronze.
f. Disc: Solid wedge; lead free bronze.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron.

B. RS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-111-LF or T-111-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves

2. Description:
a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B584 C87850 dezincification resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free silicon bronze.
f. Disc: Solid wedge, lead free bronze.
g. Packing: Asbestos free.
h. Handwhell: Malleable iron.

2.6 IRON GATE VALVES

A. Class 125, Ductile-Iron Resilient Wedge Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F-619-RWS (NRS) or F-607-RWS (OS&Y) or a comparable product by one of the following:

a. Clow
b. Mueller

2. Description:

a. Standard: AWWA C-509 and C-515,
b. CWP Rating: 300 psig.
c. Body Material: ASTM A-536 ductile iron, fusion-bonded epoxy coating inside and out.
d. Ends: Flanged.
e. Trim: stainless steel.
f. Disc: Rubber encapsulated ductile iron wedge.

g. Packing and Gasket: Asbestos free.

2.7 MANUAL CIRCUIT BALANCING VALVES

A. Bronze, Fixed Orifice, Balancing Valves (2” and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T/S-1810-LF or a comparable product by one of the following:

   a. Or approved equal

2. Description:

   a. CWP Rating: 300 psig
   b. Maximum Operating Temperature: 260°F.
   c. Body Material: Bronze or dezincification-resistant brass, lead free, Y-pattern globe type with fixed orifice (venture) for precise regulation and control. NO QUARTER TURN VALVES WILL BE ACCEPTED.
   d. Plug: Bronze or dezincification-resistant brass with EPDM O-Rings.
   e. Seat: Bronze or dezincification-resistant brass.
   f. Ends: Threaded or Solder.
   g. Pressure Gage Connections: Shall have two metering test ports with internal check and protective caps for use with portable differential pressure metering stations.
   h. Handle Style: Calibrated hand wheel equipped with visual position readout and hidden memory stops for repeatable regulation and control.

B. Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves (2-1/2” and larger):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F/G 737A or a comparable product by one of the following:

   a. Tour & Andersson

2. Description:

   a. CWP Rating: 240 psig
   b. Maximum Operating Temperature: 250°F.
   c. Body Material: Cast-iron or steel body, globe pattern with calibrated orifice. NO BUTTERFLY VALVES.
   d. Stem Seals: EPDM O-Rings
   e. Disc: EPDM coated cast-iron disc.
   f. Seat: Bronze or dezincification brass.
   g. Ends: Flanged or grooved.
   h. Pressure Gage Connection: Integral seals for portable differential pressure meter.
   i. Handle Style: Calibrated hand wheel equipped with visual position readout and concealed memory stops for repeatable regulation and control.

2.8 GAS SHUT-OFF COCKS:

A. Gas Shut-Off Cocks, Above Grade (4" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-FP-600-A or a comparable product by one of the following:

a. Or approved equal.

2. Description:

a. Standard: MSS SP-110
b. CWP Rating: 600 psig.
c. SWP Rating: 150 psig.
d. Gas Rating: CSA certified and UL/FM listed.
e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
f. Body Material: Dezincification-resistant brass.
g. Seats: PTFE
h. Ball: Chrome-plated brass
i. Ends: Threaded
j. Port: Full

B. Gas Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

a. Or approved equal.

2. Description:

a. Standards: ASTM D-2513 and ANSI B16.40
b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

2.9 LPG SHUT-OFF COCKS:

A. LPG Shut-Off Cocks, Above Grade (3" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-585-70-UL (1/2" – 1") and T-580-70-UL (1-1/4" – 3") or a comparable product by one of the following:

a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110, CSA certified and UL/FM listed.
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: 250 psi non-shock LP gas per UL842.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full port (1/2" – 1"), conventional port (1-1/4" – 3")

B. LPG Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install check valves for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.
2. Check Valves: In horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, butterfly valves.
2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
3. Throttling Service: Ball or Butterfly valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends.
3. For Steel Piping, NPS 2 and Smaller: Threaded ends.
4. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends.

3.5 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: Threaded ends.
2. Ball Valves: Two piece, full port, bronze with stainless-steel trim.
3. Bronze Lift Check Valves: Class 125, nonmetallic TFE disc.

4. Bronze Swing Check Valves: Class 150, nonmetallic TFE disc.
5. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 and Larger:

1. Ductile-Iron, Single-Flange Butterfly Valves: 200 CWP, EPDM seat, aluminum-bronze disc.

END OF SECTION 22 05 23

SECTION 22 05 29- HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Fastener systems.

B. Related Sections:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.6 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in

walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This

drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.13 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 Pipe Supports: Unless otherwise indicated on the drawings, shall be as follows:

A. The Contractor shall furnish and install all miscellaneous iron work including angles, channels, etc., required to appropriately support the various piping systems. Hanger spacing and location shall conform to 2019 California Plumbing Code Table 313.1.

B. All horizontal runs of piping within the building to be supported from the structural framing with steel rods and split ring hangers, B-Line, Grinnell Company, Tolco, or approved equal. Steel rods shall be secured to overhead framing with side beam connectors. Where necessary, install angle iron between framing to accommodate hanger rods. Where several pipes are running together, Unistrut, B-Line or Powerstrut channels with clamps may be used in lieu of individual pipe hangers, and supported from structure as herein specified. Submit test data for type of hanger supports to be provided. For support conditions other than specified herein, the Contractor shall submit method of support for approval prior to any installation.

C. Horizontal Piping Hangers and Supports:

1. General: Provide factory fabricated horizontal hangers and supports complying with one of the following MSS types listed to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.

   a. Adjustable Steel Clevis Hangers: (MSS Type 1.) B-Line B 3100
   b. Adjustable Swivel Pipe Rings: (MSS Type 5) B-Line B3690

D. Vertical-Piping Clamps:

1. General: Provide factory fabricated vertical-piping clamps complying with the following types listed, to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
2. Two-Bolt Riser Clamps: (MSS Type 8) B-Line B3373

E. Hanger-Rod Attachments:

1. General: Provide factory fabricated hanger-rod attachments B-Line, Tolco or approved equal, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-58 and manufacturer's published product information. Select size of hanger-rod attachment to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.
2. Side beam eye socket, Tolco Fig. #57 for rod sizes 3/8" dia. and Tolco Fig. #25-30-251 for rod sizes 1/2" dia.

F. Building Attachments:

1. General: Provide factory fabricated building attachments, selected by Installer to suit building structural framing conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments for copper-piping systems.

G. Hanger Rods and Spacing shall conform to the following table:

Pipe Sizes	Spacing	Rods
2 Inch and Smaller	6 Feet	3/8 Inch
2-1/2 Inch to 3 Inch	8 Feet	1/2 Inch
4 Inch and larger	8 Feet	5/8 Inch

H. Hangers and Supports shall be adequate to maintain alignment and prevent sagging and shall be placed within 18 inches of joint. Support shall be provided at each horizontal branch connection.

I. Provide lateral bracing as manufactured by B-Line or approved equal for all piping to prevent swaying or movement in accordance with SMACNA "Guidelines for Seismic Restraints of Piping Systems". Piping smaller than indicated in the guidelines shall be provided with bracing as specified for the smallest size indicated. The entire water distribution system shall be properly braced and will not move due to the action of quick closing of valves.

J. Miscellaneous Supports, Wall Brackets, Etc.: Provide where required in accordance with the best standard practices of the trade. Submit shop drawings for all fabricated supports.

2.2 Isolators. All piping which is not isolated from contact with the building by its insulation shall be installed with a manufactured type isolator. Isolators shall be B-Line vibra clamp and cushion, Super Strut, Stoneman "Trisolator", or approved equal. Piping shall be installed and supported in a manner to provide for expansion without strains. Guides shall be properly installed to ensure this requirement.

2.3 Shields:

A. General: Provide shields at piping hangers and supports, factory-fabricated, for all insulated piping as manufactured by Pipeshields Incorporated or approved equal. Size shields for exact fit to mate with pipe insulation.

1. Protection Shields: MSS Type 40; provide high density insert of same thickness of insulation or equal 100-psi average compressive strength, waterproofed calcium silicate, encased with a sheet metal shield. Insert and shield shall cover entire circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

2.4 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.5 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.6 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ERICO International Corporation.
2. PHS Industries, Inc.
3. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
4. Piping Technology & Products, Inc.

B. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig ASTM C 552 or Type II cellular glass with 100-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, stainless- steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.8 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

D. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

L. Insulated Piping:

1. Attach clamps and spacers to piping.

   a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
   b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
   c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Shield Dimensions for Pipe: Not less than the following:

   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.

b. NPS 4: 12 inches long and 0.06 inch thick.

4. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
5. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099123 "Interior Painting."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports metal trapeze pipe hangers and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.

H. Use thermal-hanger shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
4. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. C-Clamps (MSS Type 23): For structural shapes.
6. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
7. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
8. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
9. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
2. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

O. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 22 05 29

SECTION 22 05 53- IDENITIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Valve tags.
5. Warning tags.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

F. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

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    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or self-tapping screws.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: Black.

C. Background Color: White.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

H. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 incheshigh.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.5 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Section 099123 "Interior Painting."

B. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels with painted, color-coded bands or rectangles on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

C. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

D. Pipe Label Color Schedule:

1. Domestic Water Piping:

a. Background Color: White.
b. Letter Color: Black.

2. Sanitary Waste and Storm Drainage Piping:

a. Background Color: White.
b. Letter Color: Black.

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Cold Water: 1-1/2 inches, round.
b. Hot Water: 1-1/2 inches, round.

2. Valve-Tag Color:

   a. Cold Water: Natural.
   b. Hot Water: Natural.

3. Letter Color:

   a. Cold Water: Black.
   b. Hot Water: Black.

3.5 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 22 05 53

SECTION 22 07 19- PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

1. Section 220716 "Plumbing Equipment Insulation."

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.11 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.12 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.17 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.18 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Hot Water Pipe Insulation: All hot water supply and return piping, except exposed connections to plumbing fixtures, flanges and unions shall be insulated with ASTM C547, Class I, "Johns-Manville" "Micro-Lock" 850-APT, Owens-Corning Fiberglass Corp., ASJ/SL-11 or approved equal, 1" thick for sizes up to 2" and 1-1/2" thick for sizes 2" and larger with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Insulation shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC

1. Exposed insulated piping in occupied areas and exposed outside the building shall be covered with Johns-Manville” “Zeston” 30-mil thick white PVC jacketing material per ASTM D1784 with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Jacketing shall comply with ASTM E84, and shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC.
2. Hot water piping below slab shall have insulation protected by a 10-mil thick polyethylene plastic sleeve sealed watertight with poly vinyl chloride tape.

B. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

E. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

F. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

G. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Johns Manville; Micro-Lok.
b. Knauf Insulation; 1000-Degree Pipe Insulation.
c. Owens Corning; Fiberglas Pipe Insulation.

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

H. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Armacell LLC; Tubolit.
b. Nomaco Insulation; IMCOLOCK and NOMALOCK.

I. All insulation shall be continuous through supports and hangers.

J. All fixtures complying with the provisions of the Americans with Disabilities Act shall be provided with Prowrap insulation for exposed hot water pipe, tailpiece, and trap as manufactured by McGuire, and secured per manufacturers recommendations. No tape wrapping shall be permitted.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
b. Eagle Bridges - Marathon Industries; 225.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-96.
   b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 81-33.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
   b. Eagle Bridges - Marathon Industries; 225.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-20.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Products: Subject to compliance with requirements, provide the following:

   a. Johns Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. ABI, Ideal Tape Division; 428 AWF ASJ.
   b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
   c. Compac Corporation; 104 and 105.
   d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. ABI, Ideal Tape Division; 370 White PVC tape.
   b. Compac Corporation; 130.
   c. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

2.4 SECUREMENTS

A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

2.5 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

   a. McGuire Manufacturing.

2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.

   a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for

above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

B. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be the following:

a. McGuire pre-insulated trap and supply covers.

END OF SECTION 22 07 19

SECTION 22 11 16- DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Under-building-slab and aboveground domestic water pipes, tubes, and fittings inside buildings.
2. Encasement for piping.

B. Related Requirements:

1. Section 221113 "Facility Water Distribution Piping" for water-service piping outside the building from source to the point where water-service piping enters the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.12 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.13 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

B. Field quality-control reports.

1.14 FIELD CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of water service.
2. Do not interrupt water service without Architect's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61. Plastic piping components shall be marked with "NSF-pw."

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

B. Soft Copper Tube: ASTM B 88, Type K water tube, annealed temper.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

D. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

E. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

F. Piping within the building and above grade shall be Type "L" ASTM B88, hard drawn copper tubing with wrought copper sweat fittings ANSI B16.18 and B16.22,

G. Outdoor underground piping in sizes 2-1/2" and 3" shall be Type "L" ASTM B88, hard drawn copper as specified for water piping within the building. Piping 2" and smaller shall be Type "K" ASTM B88, hard drawn copper with wrought copper sweat fittings ANSI B16.18 and B16.22.

H. Piping below the building floor shall be Type "K" soft annealed copper tubing with no fittings below the slab.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. Full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys.

D. Flux: ASTM B 813, water flushable.

E. Brazing Filler Metals: AWS A5.8/A5.8M, BCP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.4 VALVE ACCESSORIES AND SPECIALTIES

A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. For service shut-off valves on domestic water; for pressure regulator assemblies, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type
2. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.5 CORROSION PROTECTION:

1. General.

   a. Corrosion protection shall be provided for all below grade copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

2. Materials.

   a. Copper piping encasement.

      1) The polywrap shall be minimum 6 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall conform to the requirements of ASTM D1248.

2) The polywrap shall be as manufactured by Northtown Company or approved equal.

b. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
½" to ¾" copper	2"
1" to 1-½ copper	3"
2" copper	4"
2-1/2" copper	5"
3" copper	6"

c. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

1) Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

d. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.

D. Install shutoff valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."

E. Install shutoff valve immediately upstream of each dielectric fitting.

F. Install domestic water piping level without pitch and plumb.

G. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

H. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

I. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

J. Install piping to permit valve servicing.

K. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

L. Install piping free of sags and bends.

M. Install fittings for changes in direction and branch connections.

N. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

O. Install thermometers on outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing Piping."

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

S. Corrosion Protection:

1. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the poly-wrap. The bunched-up poly-wrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the poly-wrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.

2. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.
3. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 2 and Smaller: 72 inches with 3/8-inch rod.
2. NPS 2-1/2 to NPS 3: 8 feet with 1/2-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.5 CONCRETE VAULT INSTALLATION

A. Install precast concrete vaults according to ASTM C 891.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
3. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.7 PIPE AND EQUIPMENT IDENTIFICATION

A. Each operating and service line shut-off valve shall be identified by a 19 ga. brass tag with stamped, engraved type of service identified and area served, complete with hole and brass chain mounted on valve stem or handle. Tag shall be a minimum of one and one-half inch (1-1/2") in diameter.

B. All piping systems shall be readily identifiable by appropriate labeling with the name of the piping contained. Such labeling shall be by means of metal tags, stenciling, stamping, or with

adhesive markers, in a manner that is not readily removable. Labeling shall appear on the piping at intervals of not more than 20 ft and at least once in each room and each story traversed by the piping system.

C. Provide on exterior wall of each building opposite the building's main gas service a sign reading "Gas Shut Off". Sign shall be metal with minimum 1-1/2" high-embossed letters.

1. All equipment shall be provided with name plate indicating all pertinent information on it

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

Schedule of Test Pressures:

System Tested	Gauge	Test	Duration
Water	100 PSI	Water	4 Hours

e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

   a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
   b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

   a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
   b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours. Operate all valves during the retention period.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours. Operate all valves during the retention period.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 OPERATION INSTRUCTION

A. Prior to occupancy or prior to the date of final inspection, whichever may occur first, the Contractor shall prepare two (2) sets of typewritten instructions for the operation of all equipment, valves, etc., specified and furnished as a part of the work under this section, and shall assign a competent person, thoroughly familiar with the job, to demonstrate and instruct a representative of the Owner in the operation of the equipment. The time of said demonstration and instructions shall be arranged with the Owner's representative approximately one (1) week in advance. Verbal instructions shall include shut-off location of gas and water. The Contractor shall assemble all operation and maintenance data supplied by the manufacturers of the various pieces of equipment, all keys and special wrenches required to operate and service the equipment (including keys for yard boxes, gas stops and fixture stops), and all equipment warranties and deliver same to the representative of the Owner on date of said instructions.

3.12 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller, shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

E. Under-building-slab, domestic water piping, NPS 2 and smaller, shall be the following:

1. Soft copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

F. Aboveground domestic water piping shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and soldered joints.

3.13 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use ball valves for piping NPS 2 and smaller. Use butterfly valves with flanged ends for piping NPS 2-1/2 and larger.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

END OF SECTION 22 11 16

SECTION 22 11 19- DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Balancing valves.
5. Temperature-actuated, water mixing valves.
6. Hose bibbs.
7. Water-hammer arresters.
8. Trap-seal primer valves.
9. Trap-seal primer systems.

B. Related Requirements:

1. Section 223200 "Domestic Water Filtration Equipment" for water filters in domestic water piping.
2. Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.
3. Section 224300 "Medical Plumbing Fixtures" for thermostatic mixing valves for sitz baths, thermostatic mixing-valve assemblies for hydrotherapy equipment, and outlet boxes for dialysis equipment.
4. Section 224500 "Emergency Plumbing Fixtures" for water tempering equipment.
5. Section 224713 "Drinking Fountains" for water filters for water coolers.
6. Section 224716 "Electric Water Coolers" for water filters for water coolers.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

D. Domestic Water: The Contractor shall be responsible for the domestic water service outside of the building within five feet (5’) of the foundation, and within the building itself. See Civil Engineer’s plans for onsite domestic water system.

E. Domestic Water Service: The Contractor shall arrange with the serving utility company for the installation of all water meter assemblies and reduced pressure backflow devices, including the service mains and vaults, and all required appurtenances as indicated on the drawings and in accordance with serving utility standards and shall pay all costs incurred. All required capacity fees, frontage fees and inspections, shall be paid for by the Owner. Contractor shall provide necessary tap-in connections in water main for sterilizing of domestic water system. Contractor shall connect into the main water service line as indicated on the drawings. The installation shall be in accordance with the serving utility company's standards.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 and NSF 14.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1001.
4. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
5. Body: Bronze.
6. Inlet and Outlet Connections: Threaded.
7. Finish: Rough bronze.

B. Hose-Connection Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.
d. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1011.
4. Body: Bronze, nonremovable, with manual drain.
5. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
6. Finish: Rough bronze.

C. Pressure Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1020.
4. Operation: Continuous-pressure applications.
5. Pressure Loss: 5 psig maximum, through middle third of flow range.
6. Size: See plans.
7. Design Flow Rate: See plans.
8. Selected Unit Flow Range Limits: See plans.
9. Accessories:

a. Valves: Ball type, on inlet and outlet.

D. Laboratory-Faucet Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1035.
4. Size: NPS 1/4 or NPS 3/8 (DN 8 or DN 10) matching faucet size.
5. Body: Bronze.
6. End Connections: Threaded.
7. Finish: Chrome plated.

2.4 OUTLET BOXES

A. Clothes Washer Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. Guy Gray Manufacturing Co., Inc.
   c. IPS Corporation.
   d. Symmons Industries, Inc.
   e. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   f. Whitehall Manufacturing; a div. of Acorn Engineering Company.
   g. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.

3. Mounting: Recessed.
4. Material and Finish: Plastic box and faceplate.
5. Faucet: Combination valved fitting or separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
6. Supply Shutoff Fittings: NPS 1/2 (DN 15) gate, globe, or ball valves and NPS 1/2 (DN 15) copper, water tubing.
7. Drain: NPS 2 (DN 50) standpipe and P-trap for direct waste connection to drainage piping.
8. Inlet Hoses: Two 60-inch- (1500-mm-) long, rubber household clothes washer inlet hoses with female, garden-hose-thread couplings. Include rubber washers.
9. Drain Hose: One 48-inch- (1200-mm-) long, rubber household clothes washer drain hose with hooked end.

B. Icemaker Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. IPS Corporation.

3. Mounting: Recessed.
4. Material and Finish Plastic box and faceplate.
5. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 (DN 15) or smaller copper tube outlet.
6. Supply Shutoff Fitting: NPS 1/2 (DN 15) gate, globe, or ball valve and NPS 1/2 (DN 15) copper, water tubing.

2.5 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Include operating key with each operating-key hose bibb.

2.6 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.
   b. Zurn Industries, LLC; Plumbing Products Group; Specification Drainage Products.

2. Standard: ASSE 1010 or PDI-WH 201.
3. Type: Metal bellows.
4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.7 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. MIFAB, Inc.
   b. Precision Plumbing Products, Inc.
   c. Sioux Chief Manufacturing Company, Inc.

2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.8 TRAP-SEAL PRIMER SYSTEMS

A. Trap-Seal Primer Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.

2. Standard: ASSE 1044.
3. Piping: NPS 3/4, ASTM B 88, Type L; copper, water tubing.
4. Cabinet: Surface-mounted steel box with stainless-steel cover.
5. Electric Controls: 24-hour timer, solenoid valve, and manual switch for 120-V ac power.

   a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

6. Vacuum Breaker: ASSE 1001.
7. Number Outlets: Four.
8. Size Outlets: NPS 1/2.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water-hammer arresters in water piping according to PDI-WH 201.

B. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

C. Install trap-seal primer systems with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 Access Panels:

A. Wall access panels shall be minimum 12" x 12" for concealed valves and other equipment unless otherwise specified or indicated. Ceiling access panels shall be 18" x 18" minimum. Access panels shall be located and positioned for ready access and service of equipment housed within. Where access panels are specified with keyed cylinder locks, all such locks shall be identically keyed.
   1. Wall, Non-Fire Rated: Elmdor/Stoneman DW-SS-CL, drywall, stainless steel finish, cylinder lock.
   2. Ceiling, Non-fire Rated: Elmdor/Stoneman DW, drywall, prime coated finish, screwdriver latch.

3. Wall, Fire Rated: Elmdor/Stoneman FR-SS-CL, fire rated, stainless steel finish, cylinder lock.
4. Ceiling, Fire rated: Elmdor/Stoneman FRC, Fire rated, prime coated finish, return latch.

3.3 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.4 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
1. Supply-type, trap-seal primer valves.
2. Trap-seal primer systems.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.5 FIELD QUALITY CONTROL

A. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

B. Prepare test and inspection reports.

3.6 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

B. Set field-adjustable flow set points of balancing valves.

C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

END OF SECTION 22 11 19

SECTION 22 13 16- SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

B. Related Sections:
1. Section 221313 "Facility Sanitary Sewers" for sanitary sewerage piping and structures outside the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

    1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

1.14 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.15 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Architect's written permission.

1.16 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.17 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.18 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.

C. ASTM C 1540, CISPI, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ANACO-Husky SD 4000 series.
b. Clamp All HI_TORQ 125 series

2. Standards: ASTM C 1277 and CISPI 310.
3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Soil and waste piping within the building itself and outside within five feet (5') of the foundation, shall be no-hub cast iron pipe and fittings, asphaltum coated, free from defects, and shall comply with CISPI. Standard 301, ASTM A-888 or ASTM A-74. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute. Fittings shall be made up with "Husky" SD 4000 series or “Clamp All” HI-TORQ 125 series stainless steel type 304 couplings and shall conform to ASTM C1540 & ASTM C564 except all above ground vent pipe fittings may be made with "Anaco" or "Tyler" stainless steel two band couplings conforming to CISPI Standard 310.

E. Except where otherwise indicated on the plans, building sewer piping from five feet (5') outside of the building to connections at the sewer shall be PVC (polyvinyl chloride) ASTM D3034, SDR-35 sewer pipe with locked-in gasket (ASTM F477, Elastomeric Seal)

2.3 CLEANOUTS

A. Cast-Iron Cleanouts:

1. Cleanouts to Grade: Jay R. Smith No. 4258 or Jay R. Smith No. 4253 with X-H bronze plug and X-X-H non-skid cover with lifting device set flush with surface for concrete areas. Asphalt or nonsurfaced areas shall be installed with ring of concrete poured around the bottom flange six inches (6") below surface. Use cast iron soil pipe on cleanout risers. For cleanouts in non-traffic areas, terminate cleanout plug in concrete yard box
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Smith, Jay R. Mfg. Co.
    b. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

3. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
4. Top-Loading Classification(s): Light Duty Medium Duty Heavy Duty and Extra-Heavy Duty.
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

B. Yard Boxes & Vaults: For service for cleanouts, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type.

2.4 CORROSION PROTECTION

A. General.

1. Corrosion protection shall be provided for all below grade cast iron and copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

B. Materials.

1. Cast iron piping encasement.

    a. The polywrap shall be minimum 8 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall meet or exceed the requirements of AWWA C105, ANSI A21.5 and ASTM A674.
    b. The polywrap shall be as manufactured by Northtown Company or approved equal.

2. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
2” to 3” cast iron	14”

4” cast iron	16”
6” cast iron	20”
8” cast iron	24”

3. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

   a. Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

4. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.

2. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

O. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."

2. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

P. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

T. Below-grade piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts and sleeves as manufactured by Century Line.

U. Corrosion Protection:

a. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the polywrap. The bunched-up polywrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the polywrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.
b. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.

c. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
8. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
4. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4: 84 inches with 3/8-inch rod.
2. NPS 1-1/2: 108 inches with 3/8-inch rod.
3. NPS 2: 10 feet with 3/8-inch rod.
4. NPS 2-1/2: 11 feet with 1/2-inch rod.
5. NPS 3: 12 feet with 1/2-inch rod.
6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.

I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

3.7 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. No piping work shall be concealed or covered until piping has been tested, inspected and approved by the Inspector. All piping for plumbing systems shall be completely installed and tested as required by the Uniform Plumbing Code. Test pressures and times indicated are a minimum only. All tests shall be as required by the governing authority as wellTest for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.10 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

C. Aboveground, vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

D. Underground, soil, waste, and vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

END OF SECTION 22 13 16

SECTION 22 13 19- SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cleanouts.
2. Floor drains.
3. Trench drains.
4. Miscellaneous sanitary drainage piping specialties.
5. Grease interceptors.

B. Related Requirements:

1. Section 221423 "Storm Drainage Piping Specialties" for storm drainage piping inside the building, drainage piping specialties, and drains.
2. Section 224300 "Medical Plumbing Fixtures" for plaster sink interceptors.
3. Section 334100 "Storm Utility Drainage Piping" for storm draining piping and piping specialties outside the building.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. FOG: Fats, oils, and greases.

C. HDPE: High-density polyethylene plastic.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve

headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for the following:

1. Grease interceptors.

B. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

C. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.

4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 INFORMATIONAL SUBMITTALS

A. Manufacturer Seismic Qualification Certification: Submit certification that grease interceptors, accessories, and components will withstand seismic forces defined in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
   b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

1.14 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

1.15 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

1.16 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.17 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.18 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.19 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate size and location of roof penetrations.

1.20 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Cultures: Provide 1-gal. bottles of bacteria culture recommended by manufacturer of FOG disposal systems equal to 200 percent of amount installed, but no fewer than 2 1-gal. bottles.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Exposed Metal Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Zurn
b. JR Smith
c. Watts

2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.
3. Size: Same as connected drainage piping
4. Body Material: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure: Countersunk, brass plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

B. Metal Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Zurn
b. JR Smith
c. Watts

2. Standard: ASME A112.36.2M for cast-iron soil pipe with cast-iron ferrule threaded, adjustable housing cleanout.
3. Size: Same as connected branch.
4. Type: Cast-iron soil pipe with cast-iron ferrule Threaded, adjustable housing.
5. Body or Ferrule: Cast iron.
6. Outlet Connection: Threaded.
7. Closure: Brass plug with tapered threads.
8. Adjustable Housing Material: Cast iron with set-screws or other device.
9. Frame and Cover Material and Finish: Nickel-bronze, copper alloy.
10. Frame and Cover Shape: Round.
11. Top Loading Classification: Heavy Duty.
12. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn
   b. JR Smith
   c. Watts

2. Standard: ASME A112.36.2M. Include wall access.
3. Size: Same as connected drainage piping.
4. Body: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Option for drilled-and-threaded plug in first subparagraph below is for a screw for a wall cover plate.
6. Closure: Countersunk, brass plug.
7. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
8. Wall Access: Round, flat, chrome-plated brass or stainless-steel cover plate with screw.
9. Wall Access: stainless-steel wall-installation frame and cover.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Zurn
   b. JR Smith
   c. Watts

3. Standard: ASME A112.6.3.

4. Pattern: Floor drain.
5. Body Material: Gray iron.
6. Seepage Flange: Required.
7. Anchor Flange: Required.
8. Clamping Device: Required.
9. Outlet: Bottom.
10. Coating in first subparagraph below is usually used only on sanitary floor drains.
11. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
12. Sediment Bucket: Not required.
13. Top or Strainer Material: Nickel bronze.
14. Top of Body and Strainer Finish: Nickel bronze.
15. Top Shape: Round.

B. Stainless-Steel Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Josam Company.

3. Standard: ASME A112.3.1.
4. Outlet: Bottom.
5. Top or Strainer Material: Stainless steel.
6. Top Shape: Round.
7. Trap-Primer Connection: Required.

2.3 TRENCH DRAINS

A. Trench Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Zurn
   b. JR Smith
   c. Watts

3. Standard: ASME A112.6.3 for trench drains.
4. Material: Ductile or gray iron.
5. Flange: Anchor.
6. Clamping Device: Required.
7. Outlet: Bottom.

8. Grate Material: Ductile iron.
9. Grate Finish: Painted.
10. Top Loading Classification: Medium Duty.

2.4 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.
2. Size: Same as connected stack vent or vent stack.

2.5 GREASE INTERCEPTORS

A. Grease Interceptors:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Jensen Precast.

3. Standard: ASME A112.14.3 and PDI-G101, for intercepting and retaining fats, oils, and greases from food-preparation or -processing wastewater.
4. PDI certification is currently limited to 50-gpm (3.15-L/s) flow rate and 100-lb (45.4-kg) grease retention by PDI-G101. Larger uncertified units are available. PDI-G101 is being revised, should be available by end of 2003, and will include capacities to 100 gpm (6.3 L/s).
5. Plumbing and Drainage Institute Seal: Not required.
6. Rate in subparagraph below is limited to 100 gpm (6.3 L/s).
7. Capacity in first subparagraph below is limited to 200 lb (90.7 kg).
8. Grease Retention Capacity: 750 Gallon.
9. Inlet and Outlet Size: 4”
10. Cleanout: Integral or field installed on outlet.
11. Mounting: Recessed, flush with floor.
12. Operation: Manual cleaning.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Equipment Mounting:

1. Install grease interceptors on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 03 30 00 "Cast-in-Place Concrete." Section 03 30 53 "Miscellaneous Cast-in-Place Concrete."
2. Comply with requirements for vibration isolation and seismic control devices specified in Section 22 05 48 "Vibration and Seismic Controls for Plumbing Piping and Equipment"
3. Comply with requirements for vibration isolation devices specified in Section 22 05 48.13 "Vibration Controls for Plumbing Piping and Equipment."

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

E. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
1. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
2. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

F. Install trench drains at low points of surface areas to be drained. Set grates of drains flush with finished surface, unless otherwise indicated.

G. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.

H. Install flashing fittings on sanitary stack vents and vent stacks that extend through roof.

I. Install through-penetration firestop assemblies in plastic conductors and stacks at floor penetrations.

J. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.
1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
2. Size: Same as floor drain inlet.

K. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

L. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.

M. Install vent caps on each vent pipe passing through roof.

N. Install frost-resistant vent terminals on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.

O. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

P. Install frost-proof vent caps on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.

Q. Install grease interceptors, venting according to authorities having jurisdiction and with clear space for servicing.
   1. Flush with Floor Installation: Set unit and extension, if required, with cover flush with finished floor
   2. Install cleanout immediately downstream from interceptors not having integral cleanout on outlet.

R. Install wood-blocking reinforcement for wall-mounting-type specialties.

S. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 CONNECTIONS

A. Comply with requirements in Section 22 13 16 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Grease Interceptors: Connect inlet and outlet to unit, and connect flow-control fitting and vent to unit inlet piping. Install valve on outlet of automatic drawoff-type unit.

D. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

E. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

3.3 FLASHING INSTALLATION

A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
   1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft., 0.0938-inch thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft., 0.0625-inch thickness or thinner.
   2. Copper Sheets: Solder joints of copper sheets.

B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
   1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.
   2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.
   3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.

C. Set flashing on floors and roofs in solid coating of bituminous cement.

D. Secure flashing into sleeve and specialty clamping ring or device.

E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Section 07 62 00 "Sheet Metal Flashing and Trim."

F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.4 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
   1. Grease interceptors.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.6 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain grease removal devices. Refer to Section 01 79 00 "Demonstration and Training."

END OF SECTION 22 13 19

SECTION 22 42 13 13- COMMERCIAL WATER CLOSETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Water closets.
2. Flushometer valves.
3. Toilet seats.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.

11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
12. Clearance around accessible water closets and in toilet compartments shall be 60 inches minimum measured perpendicular from the side wall and 56 inches minimum measured perpendicular from the rear wall per CBC Section 11B-604.3.1.
13. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
14. Accessible fixture controls shall comply with CBC Sections 11B-604.6 for water closets and 11B-604.9.5 for children's water closets.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each

submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding

proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than six of each type.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 FLOOR-MOUNTED, BOTTOM-OUTLET WATER CLOSETS

A. Water Closets: Floor mounted, bottom outlet, top spud.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Bowl:

a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
b. Material: Vitreous china.
c. Type: Siphon jet.
d. Style: Flushometer valve.
e. Height: Standard.
f. Rim Contour: Elongated.
g. Water Consumption: 1.28 gal. (4.8 L) per flush.
h. Spud Size and Location: NPS 1-1/2 (DN 40); top.

2.2 FLUSHOMETER VALVES

A. Lever-Handle, Diaphragm Flushometer Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Sloan Valve Company.

2. Standard: ASSE 1037.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: Exposed.
9. Consumption: 1.28 gal. (4.8 L) per flush.
10. Minimum Inlet: NPS 1 (DN 25).
11. Minimum Outlet: NPS 1-1/4 (DN 32).

2.3 TOILET SEATS

A. Toilet Seats:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Bemis Manufacturing Company.
   b. Olsonite Seat Co.

2. Standard: IAPMO/ANSI Z124.5.
3. Material: Plastic.
4. Type: Commercial (Standard).
5. Shape: Elongated rim, open front.
6. Hinge: Self-sustaining, check.
7. Hinge Material: Noncorroding metal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, according to ICC/ANSI A117.1.

B. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.

C. Install toilet seats on water closets.

D. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Where installing piping adjacent to water closets, allow space for service and maintenance.

3.4 ADJUSTING

A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.

B. Adjust water pressure at flushometer valves to produce proper flow.

C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.

B. Install protective covering for installed water closets and fittings.

C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-604.6 for water closets

END OF SECTION 22 42 13 13

SECTION 22 42 16 13- COMMERCIAL LAVATORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lavatories.
2. Faucets.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.
11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.

12. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
13. Accessible fixture controls shall comply with CBC Sections 11B-611.3 for lavatories and sinks.
14. Accessible lavatories and sinks shall be mounted with the front of the higher of the rim or counter surface 34” maximum above the finish floor or ground. Depth of lavatories or sinks shall not interfere with knee an toe clearance provided in accordance with CBC 11B-306 when forward approach is required CBC Sections 11B-606.3 and 11B606.7.
15. Water supply and drain pipes under accessible lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under accessible lavatories or sinks. CBC Section 11B-606.5.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES

A. Lavatory: Vitreous china, wall mounted, with back.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Fixture:

a. Standard: ASME A112.19.2/CSA B45.1.
b. Type: For wall hanging.
c. Faucet-Hole Location: Top.

d. Color: White.
e. Mounting Material: Chair carrier.

3. Support: ASME A112.6.1M, Type II, concealed-arm lavatory carrier.

2.2 SOLID-BRASS, MANUALLY OPERATED FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Lavatory Faucets: Manual-type, single-control mixing, commercial, solid-brass valve.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago Faucets.

2. Standard: ASME A112.18.1/CSA B125.1.
3. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
4. Body Material: Commercial, solid brass.
5. Finish: Polished chrome plate.
6. Mounting Type: Deck, exposed.

2.3 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

E. Operation: Loose key.

F. Risers:

1. NPS 3/8.
2. Chrome-plated, rigid-copper-pipe and brass straight or offset tailpieces riser.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Install lavatories level and plumb according to roughing-in drawings.

B. Install supports, affixed to building substrate, for wall-mounted lavatories.

C. Install accessible wall-mounted lavatories at handicapped/elderly mounting height for people with disabilities or the elderly, according to ICC/ANSI A117.1.

D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

G. Point of use mixing valve in cabinet to be recessed in wall, under lavatory.

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of lavatories, inspect and repair damaged finishes.

B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed lavatories and fittings.

D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-606.4 for lavatories and sinks.

D. Accessible sinks shall be 6-1/2” deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34” maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 42 16 13

SECTION 22 47 13- DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes drinking fountains and related components.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
10. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
11. Accessible fixture controls shall comply with CBC Sections 11B-602.3 for drinking fountains.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section.

In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains to include in maintenance manuals.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

A. Drinking Fountains: Stainless steel, wall mounted.

1. Stainless-Steel Drinking Fountains:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   1) Elkay Manufacturing Co.
   2) Haws Corporation.

3. Type Receptor: On horizontal support.
4. Back Panel: Stainless-steel wall plate behind drinking fountain.
5. Bubblers: Two, with adjustable stream regulator, located on deck.
6. Control: Push button.
7. Drain: Grid type with NPS 1-1/4 tailpiece.
8. Supply: NPS 3/8 with shutoff valve.
9. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
10. Support: ASME A112.6.1M, Type III lavatory carrier.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

B. Examine walls and floors for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.

B. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.

C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

E. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Install ball, gate, or globe shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Adjust fixture flow regulators for proper flow and stream height.

3.5 CLEANING

A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

C. Provide protective covering for installed fixtures.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains, 11B-604.6 for water closets, 11B-604.9.5 for children's water closets, 11B-605.4 for urinals, 11B-606.4 for lavatories and sinks, 11B-607.5 for bathtubs, 11B-608.5 for showers, and 11B-611.3 for washing machines and clothes dryers.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

3.7 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 47 13

DIVISION 31

EARTHWORK

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and, grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants, and, grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site-clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Erosion Control Drawings C1.10-C1.15.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

3.4 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 31 10 00

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 320120 - DETECTABLE WARNING SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Raised truncated domes.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Detectable warning surfaces:
      a. Detectable warnings surfaces shall comply with CBC Section 11B-705.1.
      b. Detectable warning surfaces shall be yellow conforming to FS 33538 of Federal Standard 595C, except for locations at curb ramps, islands, or cut-through medians where color used shall contrast visually with that of adjacent walking surfaces, either light-on-dark, or dark-on-light. CBC Sections 11B-705.1.1.3.
      c. Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact. CBC Section 11B-705.1.1.4.
      d. Provide minimum 5 year warranty per DSA Bulletin 10/31/02, revised 04/09/08.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Samples: 5 by 5 inch sample.

C. Shop Drawings: Show fabrication details, composite structural system, joints, and material to be used as well as outlining installation materials and procedure.

D. Qualification Data: For manufacturer.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance requirements indicated, based on comprehensive testing of current materials.

F. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Duration: 5 years. Such warranty shall indicate compliance with architectural standards as published in the current edition of the California Building Standards Code, and also include durability criteria which indicate that the shape, color fastness, confirmation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly for specified years after initial installation.
   1. As used in this bulletin, "not degrade significantly" means that the product maintains at least 90 percent of its approved design characteristics, as determined by the enforcing agency.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Raised Truncated Domes: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Armorcast Products Company. (Basis of Design)
   2. Access Tile.
   3. Armor-Tile by Engineered Plastics Inc.
   4. ADA Tactile Systems.
   5. Or equal.

2.2 RAISED TRUNCATED DOMES

A. Surface applied system:
   1. Product: Model A6003648 by Armorcast Products Company.
   2. Compressive Strength: 11,430 PSI per ASTM C-170-99.
   3. Shear Strength: 11,670 PSI per ASTM D-372-02.
   4. Flexural Strength: 3,330 PSI per ASTM C-580-02.
   5. Modulus Elasticity: 1,776,400 PSI per ASTM C-580-02.
   6. Tensile Strength: 1,710 PSI per ASTM C-307-99.
   7. Chemical Resistance: Pass per ASTM D-543.
   8. Simulated Sunlight: Pass per ASTM D-1501.
   9. Accelerated Service Test: Pass per ASTM D-756.
   10. Water Absorption: <.1% per ASTM D-570.
   11. Flammability Test: Pass per ASTM D-635.
   12. Fungus Resistance Test: No Growth per ASTM G-21.
   13. Smoke Density: 0.3 (DS@1.5 Minutes) and 14 (DS@4 Minutes) per ASTM E-662-03.
   14. Color: Yellow.

15. Installation: Flush install by pressing into wet concrete per manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 INSTALLATION

A. Surface Applied System:
1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
3. Ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to the Architect.
4. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.
5. The surface to receive the detectable warning surface tile (not recommended for asphalt) is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a rag soaked in Acetone.
6. Immediately prior to installing the detectable warning surface tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.
7. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
8. Apply the adhesive on the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2” width of the adhesive locator. A 3 x 4 foot tile will typically require an entire tube of adhesive.
9. Set the tile true and square to the curb ramp area as detailed in the design drawings.
10. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3-1/2 inch using the recommended diameter bit.

Drill through the tile without hammer option until the tile has been successfully penetrated, and then with hammer option to drill into the concrete.

11. Immediately after drilling each hole, and while still applying foot pressure, vacuum, brush or blow away dust and set the mechanical fastener as described below, before moving on to the next hole.
12. Mechanically fasten tiles to the concrete substrate using a hammer to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the hammer, taking care to avoid any inadvertent blows to the truncated dome or tile surface. A plastic deadblow or leather hammer is recommended.
13. Working in a sequence which will prevent buckles in the tile, proceed to drill and install all fasteners in the tile's molded recesses.
14. Following the installation of the tiles, the perimeter caulking sealant should be applied. Follow the perimeter caulking sealant manufacturer's recommendations when applying. Tape all perimeter edges of the tile and also tape the adjacent concrete back 1/2” from the tile's perimeter edge. Tool the perimeter caulking with a plastic applicator or spatula to create a straight edge in a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
15. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking.

END OF SECTION 320120

SECTION 32 12 16 - HOT-MIX ASPHALT (HMA) PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hot-mix asphalt paving and paving overlay.

B. Traffic Stripes and Pavement Marking.
   1. traffic stripe: A longitudinal centerline or a longitudinal lane line used for separating traffic lanes in the same direction of travel or in the opposing direction of travel or a longitudinal edge line marking the edge of the traveled way or the edge of a lane at a gore area separating traffic at an exit or entrance ramp. A traffic stripe is a traffic line as shown.
   2. Pavement marking: A transverse marking such as (1) a limit line, (2) a stop line; or (3) a word, symbol, shoulder, parking stall, or railroad grade crossing marking.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

C. Material certificates.

D. Log of placement of asphalt, including dates, times, temperature readings and other pertinent information.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC) and the California Department of Transportation (Caltrans), latest editions and supplements for asphalt paving work. These Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and payment sections do not apply to this document.

C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Tack Coat: Minimum surface temperature of 60 deg F.
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: Crushed rock conforming to SSPWC 203-6.2.3.

B. Fine Aggregate: Sand, rock dust, mineral filler, or a blend of these materials conforming to SSPWC 203-6.2.3. Mineral filler, if required, shall conform to SSPWC section 203-6.2.3.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Paving asphalt, viscosity grade PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

B. Tack Coat: PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

C. Mixes: Hot-Mix Asphalt (HMA):

Surface Course: Dense, hot-laid, hot-mix asphalt plant mix III-C2, PG 64-10 designed in conformance with SSPWC Section 203.

Base Course: Dense, hot laid, hot-mix asphalt plant mix III-B, PG 64-10 designed in conformance with SSPWC Section 203.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-1952E for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01R2 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: White, Yellow, and Blue as indicated on the plans.

C. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

PART 3 - EXECUTION

3.1 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.

1. Mill to a depth of 2 inches, minimum.

3.2 PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.

C. Patching: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

3.3 SURFACE PREPARATION

A. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.08 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
3. Asphalt binder tack coat temperature must be in the range of 285 to 350 deg F when applied.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at minimum temperature of 280 deg F and maximum temperature of 350 deg F (PG 64-10).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Pave HMA in maximum 3” thick compacted layers.

2. Minimum atmospheric temperature shall be 55 deg F, and minimum surface temperature shall be 60 deg F. If the surface to be paved is both in sunlight and shade, pavement surface temperatures must be taken in the shade.

3. Complete compaction for Base Course before surface temperature drops below 250 deg F, and for Finish Course before surface temperature drops below 150 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch (no minus).

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch
2. Surface Course: 1/8 inch
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 PAVEMENT STRIPING AND MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age before starting pavement striping and marking, as recommended by the paint manufacturer.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

E. Do not paint if the atmospheric temperature could drop below 50 deg F during the drying period.

3.8 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 32 12 16

SECTION 32 13 13 – CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Curbs and gutters.
   2. Walkways.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated, including admixtures.

B. Design Mixtures: For each concrete pavement mixture.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

C. All work to be performed and materials to be used shall be in accordance with the Standard Specifications for Public Works Construction, latest edition and supplements.

D. The Contractor shall have one copy of the Standard Specifications at the job site.

E. The Standard Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and pavement sections do not apply to this document.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."

2.2 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: ASTM C 150, Type II, low alkali. Supplement with the following:

a. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quantity.

B. Combined Aggregates: Gradation “C” conforming to SSPWC Section 201-1.3.2.

C. Water: ASTM C 94/C 94M.

2.3 CURING MATERIALS

A. Liquid Curing Compound: ASTM C309, fugitive dye dissipating type, complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.

B. Moisture-Retaining Cover (Curing Sheet): ASTM C 171, non-staining polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

2.4 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

D. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-

1952 for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: As indicated per plan.

2.5 WHEEL STOPS

A. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures in conformance with SSPWS Section 201, with the following properties:

1. Concrete class: 560-C-3250
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45
3. Slump Limit: 4 inches, plus or minus 1 inch.

B. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates to Architect for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

A. General: Form construction, isolation, and control joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

F. Portland Cement Concrete paving shall be stable, firm, and slip-resistant and shall comply with CBC Sections 11B-302 and 11B-403.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.

1. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturers written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these methods.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances as follows

1. Elevation: 1/4 inch
2. Thickness: Plus 3/8 inch minus 1/4 inch
3. Surface: Gap below 10-foot-long, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.9 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.10 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.11 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 323113 - CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Chain-Link Fences: Industrial.
   2. Gates: Swing.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.

A. Accessibility Requirements for Door Hardware: (all requirements below shall apply to gates as well)
   1. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.
   2. The clear opening width for a door shall be 32” minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. There shall be no projections into it below 34” and 4” maximum projections into it between 34” and 80” above the finish floor or ground. Door closers and stops shall be permitted to be 78” minimum above the finish floor or ground. CBC Section 11B-404.2.3
   3. Handles, pulls, latches, locks, and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34” minimum and 44” maximum above finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable form both side. CBC Section 11B-404.2.7
   4. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.
      a. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 pounds (22.2 N) maximum.
      b. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds (67N).
      c. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.

d. The force required to activate any operable parts, such as retracting latch bolts or disengaging other devices, shall be 5 pounds (22.2N) maximum to comply with CBC Section 11B-309.4.

5. Door closing speed shall be as follows: CBC Section 11B-404.2.8.
   a. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds min.
   b. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
6. Thresholds shall comply with CBC Section 11B-404.2.5.
7. Floor stops shall not be located in the path of travel and 4" maximum from walls.
8. Hardware (including panic hardware) shall not be provided with "Night Latch" (NL) function for any accessible doors or gates unless the following conditions are met per DSA Interpretation 10-08 DSA /AC (External), revised 4/28/09. Such conditions must be clearly demonstrated and indicated in the specifications:
   a. Such hardware has a 'dogging' feature.
   b. It is dogged during the time the facility is open.
   c. Such 'dogging' operation is performed only by employees as their job function (non-public use).
9. Pair of doors: limit swing of one leaf to 90 degrees so that a clear floor space is provided beyond the arc of the swing for the wall-mounted tactile sign. CBC Section 11B-703.4.2.1.

B. Fences, gates and hardware:
   1. Gates that are part of the accessible route shall meet all the requirements of an accessible door in compliance with CBC Section 11B-404.
   2. The lever of lever actuated latches or locks for an accessible gate shall be curved with a return to within 1/2" of the (face of) gate to prevent catching on the clothing or persons. California Referenced Standards code. T-24 Part 12, Section 12-10-202, Item (F).
   3. Swing doors and gate surfaces within 10" of the finish floor or ground shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16" of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped. CBC Section 11B-404.2.10.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
   1. Fence and gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, swing gate, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

C. Product Certificates: For each type of chain-link fence, and gate, signed by product manufacturer.
   1. Strength test results for framing according to ASTM F 1043.

D. Qualification Data: For Installer.

E. Maintenance Data: For the following to include in maintenance manuals:

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

B. Interruption of Existing Utility Service: Do not interrupt utility services to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect no fewer than 2 days in advance of proposed interruption of utility services.
   2. Do not proceed with interruption of utility services without Architect's written permission.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Chain-Link Fences and Gates: Subject to compliance with requirements, provide products by one of the following.
   1. Master-Halco.
   2. Ameristar.
   3. Anchor Fence.
   4. Merchants Metals.
   5. Swan Fence Inc.

6. Or equal.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
   1. Steel Wire Fabric: Metallic-coated wire with 9 gage (0.144 inches) core thickness.
      a. Mesh Size: 2 inches.
      b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied after weaving.
   2. Selvage: Knuckled at both selvages.

2.3 INDUSTRIAL FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, and the following:
   1. Group: Group IC round high yield pipe, ASTM F 1043, domestic (not imported) Deluxe Quality (DQ-40) Industrial (not Schedule 40).
   2. Fence Height: As indicated on Drawings.
   3. Strength Requirement: Heavy industrial according to ASTM F 1043.
   4. Post Diameter and Thickness:
      a. Top and Bottom Rail: 1-5/8 inch O.D. (nominal 1-1/4 inch).
      b. Terminal Post (Corner, End, and Gate Post): 2-7/8 inch O.D. (nominal 2-1/2 inch).
      c. Line and Brace Rail: 1-7/8 inch O.D. (nominal 1-1/2 inch).
      d. Swing Gate Members: 1-7/8 inch O.D. (nominal 1-1/2 inch).
   5. End and Corner Post Top: Dome.
   6. Coating for Steel Framing:
      a. Metallic Coating:
         1) Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123 or 4.0-oz./sq. ft. zinc coating per ASTM A 653.
         2) Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
         3) External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc pigmented coating.
         4) Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
         5) Coatings: Any coating above.
      b. Polymer Coating:
         1) ASTM D 668, Class 2b, fluidized PVC bonded and cured onto metallic-coated steel wire.
         2) Color: As selected by Architect from manufacturer's full range, complying with ASTM F 934.

2.4 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:
   1. Location: Extended along bottom of fence fabric and along top when either top or bottom rails are not indicated on Drawings.

B. Metallic-Coated Steel Wire: Minimum 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817, ASTM A 824, and the following:
   1. Metallic Coating: Matching chain-link fabric coating type and weight.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

2.6 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for swing gate types.
   1. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.

B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900, domestic Deluxe Quality (DQ), and the following:
   1. Gate Fabric Height: 2 inches less than adjacent fence height.
   2. Leaf Width: As indicated.
   3. Frame members, including interior bracing:
      a. Tubular Steel: 1-7/8 inch O.D. (nominal 1-1/2 inch).

C. Frame Corner Construction:
   1. Welded adjustable truss rods for panels 5 feet wide or wider.

D. Hardware: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
   1.

2.7 CAST-IN-PLACE CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94.
   1. Concrete Mixes: Normal-weight concrete with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

2.8 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

2.9 POLYMER FINISHES

A. Supplemental Color Coating: In addition to specified metallic coatings for steel, provide fence components with polymer coating.

B. Metallic-Coated Steel Tension Wire: PVC-coated wire complying with ASTM F 1664, Class 2b.

C. Metallic-Coated Steel Framing and Fittings: Comply with ASTM F 626 and ASTM F 1043 for polymer coating applied to exterior surfaces and, except inside cap shapes, to exposed interior surfaces.
   1. Polymer Coating: Not less than 10-mil- thick PVC or 3-mil- thick polyester finish.

D. Color: Match chain-link fabric, complying with ASTM F 934.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.
   1. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Hole diameter dug or drilled minimum 4 times largest cross section of post and minimum depth of 24 inches plus additional 3 inch for each 1 feet increase in fence height over 4 feet.
      b. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts equidistant at intervals not exceeding 10 feet o.c unless otherwise indicated.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
   1. Locate horizontal braces at midheight of fabric 6 feet or higher, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.
   1. Top Tension Wire: Install tension wire through post cap loops.
   2. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Bottom Rails: Install, spanning between posts.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.5 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323113

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

7255 8TH ST
BUENA PARK, CA 90621
BUENA PARK SCHOOL DISTRICT

DSA File No. 30-4
App. No. 04-120688
PTN. 66456-48

DRAWING INDEX

SHT. NO.	SHEET NAME
GENERAL	
A0.1	COVER SHEET
A0.2	GENERAL NOTES AND ABBREVIATIONS
A0.3	CODE ANALYSIS SITE PLAN
A0.4	EXITING FLOOR PLAN
CIVIL	
C0.01	TITLE SHEET
C1.10	EROSION CONTROL & DEMOLITION PLAN
C1.30	GRADING PLAN
C1.40	PAVING PLAN
ARCHITECTURAL	
A1.1	OVERALL SITE PLAN
A2.1	DEMOLITION/ ALTERATION FLOOR PLANS/RCPS
A7.1	ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS
A8.1	INTERIOR ELEVATIONS
A10.1	DOOR SCHEDULE/DETAILS
A10.2	INTERIOR DETAILS
A10.3	SIGNAGE DETAILS
STRUCTURAL	
S1.1	GENERAL NOTES AND STRUCTURAL DETAILS
S2.1	DEMOLITION / (E) FOUNDATION AND (E) FRAMING PLANS
PLUMBING	
P0.1	PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES
P1.1	PLUMBING FLOOR PLAN

TOTAL SHEET COUNT: 19

STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS,
INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

Application No. 04-120688

File No. 30-4

[X] The drawings or sheets listed on the cover or index sheet (all M, E and FA drawings)
[ ] This drawing, page of specifications/calculations

have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:

1. design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2. coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.

The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344* of Title 24, Part 1. (Title 24, Part 1, Section 4-317 [b])

I find that:
[X] All drawings or sheets listed on the cover or index sheet
[ ] This drawing or page

[X] is/are in general conformance with the project design and
[X] has/have been coordinated with the project plans and specifications

Signature **Date** 10/15/2021

Architect or Engineer designated to be in general responsible charge.

Brian P. Whitmore
Print Name

C 30345 **License Number** 09-30-2023 **Expiration Date**

STATEMENT OF GENERAL CONFORMANCE AND SIGNATURE BLOCK PER IR A-18

CODES AND REGULATIONS

PARTIAL LIST OF APPLICABLE CODES AS OF JANUARY 1, 2020*

2019 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
(2018 INTERNATIONAL BUILDING CODE, VOL 1 & 2 AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ELECTRICAL CODE AND 2019 CALIFORNIA AMENDMENTS)
(2017 NATIONAL ELECTRICAL CODE AND 2019 CALIFORNIA AMDMENTS)

2019 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
(2018 CALIFORNIA MECHANICAL CODE AND 2019 CALIFORNIA AMENDEMTNS)

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
(2018 IAPMO UNIFORM PLUMBING CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR

2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
(2018 INTERNATIONAL FIRE CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
(2018 INTERNATIONAL EXISTING BUILDING CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen) PART 11, TITLE 24 CCR

2019 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

2016 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS (PER 2019 CBC PART 2 CH 35)

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (CA AMENDED).....2016 EDITION
NFPA 14 - STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS (CA AMENDED)....2016 EDITION
NFPA 17 - STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS.....2017 EDITION
NFPA 17A - STANDARD FOR WET CHEMICAL EXTINGUISHING SYTSEMS.....2017 EDITION
NFPA 20 - STANDARD FOR THE INSTALLATION FO STATIONARY PUMPS FOR FIRE PROTECTION.....2016 EDITION
NFPA 22 - STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION.....2013 EDITION
NFPA 24 - STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES (CA AMENDED).....2016 EDITION
NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE (CA AMENDED).....2016 EDITION
NFPA 80 - STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES.....2016 EDITION
NFPA 2001 - STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CA AMENDED).....2015 EDITION
UL 300 - STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT.....2005 (R2010)
UL 464 - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS INCLUDING ACCESSORIES.....2003 EDITION
UL 521 - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS.....1999 EDITION
UL 1971 - STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED.....2002 (R2010)
ICC 300 - STANDARD FOR BLEACHERS, FOLDING AND TELESCOPIC SEATING, AND GRANDSTANDS.....2017 EDITION

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2019 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.

SEE CALIFORNIA BUILDNG CODE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

*ALL PARTS OF THE 2019 CALIFORNIA BUILDING CODE BECOME EFFECTIVE JANUARY 1, 2020 EXCEPT THE EFFECTIVE DATE FOR THE USE OF THE 2019 BUILDING ENERGY EFFICIENCY STANDARDS (TITLE 24, PART 1, CHAPTER 10) IS JANUARY 8, 2019 AND THE EFFECTIVE DATE FOR THE USE OF THE CALIFORNIA ADMINISTRATIVE CODE (TITLE 24, PART 1, CHAPTER 4) IS JANUARY 8, 2019

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PROJECT DESCRIPTION

THE PROJECT INCLUDES REPLACING STOREFRONT, ADA RESTROOM AND PATH OF TRAVEL UPGRADES AND FINISHES IN THE MULTI-PURPOSE ROOM OF BUILDING 'MP'.

DSA REQUIREMENTS

1. ALL WORK SHALL CONFORM TO THE 2019 EDITION OF THE TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. AS A FACILITY WHICH COMES UNDER THE APPROVAL AND AUTHORITY OF THE DIVISION OF THE STATE ARCHITECT (DSA), THIS PROJECT IS SUBJECT TO DRAWING AND JOB SITE REVIEW BY A REPRESENTATIVE OF DSA.
3. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS AFFECTING FLA, SSS, AND/OR ACS SHALL BE MADE BY ADDENDA OR A CONSTRUCTION CHANGE DOCUMENT APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR
4. A PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN ITEM #17.
5. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
6. A COPY OF PART 1 TO PART 5 OF TITLE 24 SHALL BE KEPT AND BE AVAILABLE IN THE FIELD DURING CONSTRUCTION.
7. DSA SHALL BE NOTIFIED OF THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24, CCR
8. THE DIVISION OF THE STATE ARCHITECT IS EXEMPT FROM ARBITRATION OR MEDIATION PROCEDURES.
9. SUPERVISION BY THE DIVISION OF THE STATE ARCHITECT IS PER SECTION 4-334, PART 1, TITLE 24, CCR
10. ADMINISTRATION OF CONSTRUCTION PER PART 1, TITLE 24, CCR:
    - VERIFIED REPORTS PER SECT 4-336; PART 1, TITLE 24 CCR
    - DUTIES OF ARCHITECT PER SECT 4-331, 4-341; PART 1, TITLE 24 CCR
    - DUTIES OF CONTRACTOR PER SECT. 4-343; PART 1, TITLE 24
11. TESTING AND INSPECTION:
    - INSPECTION APPROVED BY DSA AS PER SECT. 4-333(D); PART 1, TITLE 24, CCR
    - TESTS AND TESTING LABORATORIES PER SECT 4-335
    - SPECIAL INSPECTION PER SECT. 4-333(C)
12. CHANGES IN LEVEL FOR FLOOR FINISHES SHALL CONFORM WITH CBC SECTION 11B-302 AND 11B-303.
13. ALL TESTS TO CONFORM TO REQUIREMENTS OF SECTION 4-335; PART 1, TITLE 24, CCR
14. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335; PART 1, TITLE 24, CCR AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.
15. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH ITEM #17.
16. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)
17. INSPECTOR OF RECORD REQUIREMENTS:
    - A. A DSA CERTIFIED PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.
    - B. INSPECTOR SHALL BE CERTIFIED AS A CLASS 3 INSPECTOR THROUGH THE DIVISION OF THE STATE ARCHITECT INSPECTOR EXAMINATION PROGRAM. INSPECTOR SHALL ALSO BE SPECIFICALLY APPROVED BY THE DIVISION OF THE STATE ARCHITECT FOR THIS PROJECT AT LEAST 10 DAYS PRIOR TO THE START OF ANY WORK FOR THIS PROJECT.
    - C. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.

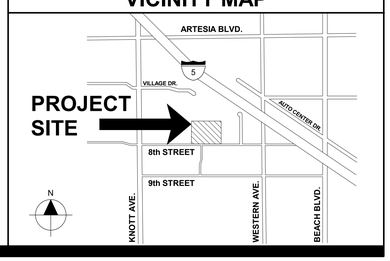
DEFERRED APPROVALS

NONE

ADD ALTERNATES

NANAWALL IN LIEU OF STOREFRONT AT WEST ELEVATION ONLY

VICINITY MAP



DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum Center Drive, Suite 1640
Irvine, California 92618
[T] 949.774.2920
www.StudioW-Architects.com

ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE C 30345 Exp. 09/30/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

GENERAL NOTES

1. This sheet is part of a set and is not to be used alone.
2. This sheet is not to be used for construction unless the architect's stamp and signature appear on the drawings and the status box indicated drawings have been released for construction.
3. These plans and prints thereof, as instruments of service, are owned by the architect and are for use on this project only. Reproduction and/or distribution without the prior written consent of the architect is forbidden.
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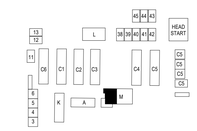
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

COVER SHEET

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A0.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:25:43 PM
FILE PATH: C:\Users\gillianc\Documents\21029-Buena-Park-USD-Gilbert-MPR-A19_gilliancNYS5V.rvt

ARCHITECTURAL DRAWING ABBREVIATIONS

#	POUND OR NUMBER
&	AND
*	ITEMS IDENTIFIED AS "NIC" ARE NOT PART OF THIS DSA APPROVAL
2X	NOMINAL LUMBER SIZE (4X, 6X, 8X, ETC.)
@	AT
⊥	PERPENDICULAR
A	
A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABV	ABOVE
AC	ASPHALTIC CONCRETE
ACC	ACCESS(IBLE)
ACP	ALUMINUM COMPOSITE PANEL
ACST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADDM	ADDENDUM
ADH	ADHESIVE
ADJ	ADJUSTABLE
ADJC	ADJACENT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISHED GRADE
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
ALS	ASSISTED LISTENING SYSTEM
ALT	ALTERNATE
ALUM./AL.	ALUMINUM
ANC	ANCHOR, ANCHORAGE
APLD	APPLIED
APPRX	APPROXIMATELY
ARCH	ARCHITECT(URAL)
ASC	ABOVE SUSPENDED CEILING
ASF	ABOVE STAGE FINISH
ASPH	ASPHALT
ASSY	ASSEMBLY
ASYM	ASYMMETRICAL
AUTO	AUTOMATIC
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
B	
B	BOLT
BC	BACK OF CURB
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLW	BELOW
BLW CLG	BELOW CEILING
BLW FFLR	BELOW FINISH FLOOR
BM	BENCH MARK
BN	BOUNDARY NAILING
BO	BOTTOM OF
BOT	BOTTOM
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
BRK	BRICK
BRKT	BRACKET
BRS	BRASS
BRZ	BRONZE
BS	BOTH SIDES
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT UP ROOFING
BW	BOTH WAYS
C	
C&G	CURB AND GUTTER
CAB	CABINET
CAD	CADMIUM
CB	CATCH BASIN
CBB	CEMENTITIOUS BACKER BOARD
CBC	CALIFORNIA BUILDING CODE
CEM	CEMENT
CER	CERAMIC
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFLG	COUNTERFLASHING
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CG	CORNER GUARD
CHBD	CHALKBOARD
CHFR	CHAMFER
CI	CAST IRON
CIP	CAST IN PLACE
CIR	CIRCLE
CIRC	CIRCULAR, CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CL	CHAIN LINK OR CENTER LINE
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLL	CONTRACT LIMIT LINE
CLOS	CLOSURE
CLR	CLEAR(ANCE)
CLRM	CLASSROOM
CMP	CORRUGATED METAL PANEL
CMPST	COMPOSITION
CMU	CONCRETE MASONARY UNIT
CNCL	CONCEALED
CNR	CORNER
CNTR	COUNTER
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMP	COMPOSITE
COMPT	COMPARTMENT
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONTR	CONTRACT(OR)
COORD	COORDINATE
CORR	CORRIDOR
CPR	COPPER
CPRS	COMPRESS(ED), (ION), (IBLE)
CPT	CARPET
CRS	COLD ROLLED STEEL
CS	CAST STONE
CSG	CASING
CSK	COUNTERSUNK
CSMT	CASEMENT
CSWK	CASEWORK
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
CTF	CERAMIC TILE FLOOR
CTG	COATING
CTR	CENTER
CUFT	CUBIC FOOT
CUIN	CUBIC INCH
CUST	CUSTODIAN
CUYD	CUBIC YARD
CW	CURTAIN WALL
D	
D	DRAIN
d.	PENNYWEIGHT (NAILS)
DA	DOUBLE ACTING
DBL	DOUBLE
DEG	DEGREES

DEMO	DEMOLISH, DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DG	DECOMPOSED GRANITE
DH	DOUBLE HUNG
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DMPF	DAMPPROOFING
DMT	DEMOUNTABLE
DN	DOWN
DR	DOOR
DRB	DRAINBOARD
DRLV	DOOR LOUVER
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE
DVTL	DOVETAIL
DW	DISHWASHER
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	
(E)	EXISTING
E	EAST
EA	EACH
EAR	EXHAUST AIR REGISTER
EB	EXPANSION BOLT
EE	EACH END
EF	EACH FACE
EFS	EXTERIOR FINISH SYSTEM
EHD	ELECTRIC HAND DRYER
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EM	EXPANDED METAL
EMER	EMERGENCY
EN	EDGE NAILING
ENCL	ENCLOSE(URE)
ENGR	ENGINEER
ENTR	ENTRANCE
EP	ELECTRICAL PANELBOARD
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCUTCHEON
ESCL	ESCALATOR
ESMT	EASEMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWS	EYE WASH STATION
EXC	EXCAVATE
EXH	EXHAUST
EXP	EXPOSED
EXPN	EXPANSION
EXS	EXTRA STRONG
EXT	EXTERIOR
F	
(F)	FUTURE
F/F	FACE TO FACE
FA	FIRE ALARM
FAB	FABRIC
FBD	FIBERBOARD
FBRK	FIRE BRICK
FCBRK	FACE BRICK
FD	FLOOR DRAIN
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FFEL	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LINE
FGL	FIBERGLASS
FHC	FIRE HOUSE CABINET
FHMB	FLAT HEAD MACHINE BOLT
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLATHEAD WOOD SCREW
FIN	FINISH(ED)
FJT	FLUSH JOINT
FLASH	FLASHING
FLDG	FOLDING
FLG	FLOORING
FLR	FLOOR
FLUOR	FLUORESCENT
FN	FIELD NAILING
FOB	FACE OF BLOCK
FOC	FACE OF CONCRETE/CURB
FOF	FACE OF FINISH
FOG	FACE OF GRID
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FPL	FIREPLACE
FPRF	FIREPROOF(ING)
FR	FRAME(D), (ING)
FRG	FIBERGLASS REINFORCED GYPSUM
FRP	FIBERGLASS REINFORCED PLASTIC
FRTW	FIRE RETARDANT TREATED WOOD
FRZ	FREEZER
FS	FIRE SPRINKLER
FS	FAR SIDE
FSTN	FASTEN, FASTENER
FT	FOOT/FEET
FTG	FOOTING
FURG	FURRED, (ING)
FWC	FABRIC WALL COVERING
G	
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GI	GALVANIZED IRON
GL	GLASS
GLULAM	GLUE LAMINATED
GLZ	GLAZING
GLZCMU	GLAZED CONRETE MASONRY UNIT
GND	GROUND
GPC	GYPSUM PLASTER CEILING
GR	GRADE
GRBM	GRADE BEAM
GRLN	GRADE LINE
GSB	GYPSUM SHEATHING BOARD
GSM	GALVANIZED SHEET METAL
GSS	GALVANIZED STEEL SHEET
GST	GLAZED STRUCTURAL TILE
GT	GROUT
GVL	GRAVEL
GYP	GYPSUM
GYP BD	GYPSUM BOARD
H	
HB	HOSE BIB
HC	HOLLOW CORE

HD	HEAVY DUTY
HDAS	HEADED ANCHOR STUD
HDJT	HEAD JOINT
HDR	HEADER
HDW	HARDWARE
HDWD	HARDWOOD
HEX	HEXAGONAL
HGR	HANGER
HLDN	HOLD DOWN
HM	HOLLOW METAL
HMD	HOLOW METAL DOOR
HMDF	HOLLOW METAL DOOR AND FRAME
HMF	HOLLOW METAL FRAME
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HOUR
HT	HEIGHT
HTG	HEATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATER
I	
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE(D), (ING)
INFO	INFORMATION
INSTL	INSTALL
INSUL	INSULATE(D), (ION)
INT	INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
ISA	INTERNATIONAL SYMBOL OF ACCESSIBILITY
J	
JAN	JANITOR
JST	JOIST
JT	JOINT
K	
KIT	KITCHEN
KO	KNOCKOUT
KPL	KICKPLATE
L	
LAB	LABORATORY
LAD	LADDER
LAM	LAMINATE
LAV	LAVATORY
LB(S)	POUND(S)
LBL	LABEL
LBR	LUMBER
LDR	LEADER
LF	LINEAL FOOT
LG	LENGTH, LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LKNT	LOCKNUT
LKR	LOCKER
LKWASH	LOCKWASHER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMST	LIMSTONE
LNSCP	LANDSCAPE(D)
LNTL	LINTEL
LP	LIGHTPROOF
LPT	LOW POINT
LT	LIGHT
LTWT	LIGHTWEIGHT
LV	LOUVER VENT
LVL	LEVEL(ER)
LWC	LIGHTWEIGHT CONCRETE
LWIC	LIGHTWEIGHT INSULATING CONCRETE
M	
MAINT	MAINTAIN(ANCE)
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MEDICINE CABINET
MCB	METAL CORNER BEAD
MDO	MEDIUM DENSITY OVERLAID
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFD	METAL FLOOR DECKING
MFR	MANUFACTUR(ER)
MH	MANHOLE
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
ML	METAL LATH
MLDG	MOLDING
MLWK	MILLWORK
MO	MASONRY OPENING
MOD	MODULE(AR)
MR	MOISTURE RESISTANT
MRB	MARBLE
MRD	METAL ROOF DECKING
MS	MACHINE SCREW
MTD	MOUNTED
MTL	METAL
MTR	MORTAR
MULL	MULLION
N	
(N)	NEW
N	NORTH
NAT	NATURAL
NCOMBL	NONCOMBUSTIBLE
NE	NOT EXCEEDING
NF	NEAR FACE
NIC	NOT IN CONTRACT
NLB	NON-LOAD BEARING
NM	NONMETALLIC
NO	NUMBER
NOM	NOMINAL
NR	NOISE REDUCTION
NRC	NOISE REDUCTION COEFFICIENT
NRCA	NATIONAL ROOFING CONTRACTOR'S ASSOCIATION
NS	NEAR SIDE
NTS	NOT TO SCALE
O	
O/	OVER
O/O	OUT TO OUT
OA	OVERALL
OBS	OBSCURE
OC	ON CENTER
OCC	OCCUPANTS OR OCCUPANCY
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OFS	OUTSIDE FACE OF STUD
OHMS	OVALHEAD MACHINE SCREW
OHWS	OVALHEAD WOOD SCREW
OI	OWNER INSTALLED
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE

OPQ	OPAQUE
OPR	OPERABLE
ORD	OVERFLOW ROOF DRAIN
OSB	ORIENTED STRAND BOARD
OVFL	OVERFLOW
OVHD	OVERHEAD
P	
P	PAINT
PA	PUBLIC ADDRESS
PAR	PARALLEL
PAT	PATTERN
PB	PANIC BAR
PBD	PARTICLE BOARD
PC	PORTLAND CEMENT
PCC	PRECAST CONCRETE
PCP	PORTLAND CEMENT PLASTER
PED	PEDESTAL
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PGBD	PEGBOARD
PH	PHASE
PHS	PHILLIPS HEAD SCREW
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PLATE, PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PM	PRESSED METAL
PMF	PRESSED METAL FRAME
PNEU	PNEUMATIC
PNL	PANEL
PNT	PAINT(ED)
POL	POLISHED
POLY	POLYETHYLENE
PORC	PORCELAIN
PORT	PORTABLE
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PREFMD	PREFORMED
PRKG	PARKING
PRML	PREMOLDED
PROJ	PROJECT
PROP	PROPERTY
PSCONC	PRESTRESSED CONCRETE
PT	POINT
PTD	PAPER TOWEL DISPENSER
PTDF	PRESSURE TREATED DOUGLAS FIR
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PVC	POLYVINYL CHLORIDE
PVG	PAVE(D), (ING)
PVMT	PAVEMENT
Q	
QT	QUARRY TILE
QTB	QUARRY TILE BASE
QTF	QUARRY TILE FLOOR
QTR	QUARTER
QTY	QUANTITY
R	
R	RISER
RA	RETURN AIR
RAB	RABBET
RAD	RADIUS
RB	RESILIENT BASE
RBR	RUBBER
RCP	REINFORCED CONCRETE PIPE
RCVR	RECEIVER
RD	ROOF DRAIN
RDWY	ROADWAY
REBAR	REINFORCING STEEL BARS
REC	RECESSED
RECT	RECTANGULAR
RECYL	RECYCLING
REF	REFERENCE
REFL	REFLECT(ED), (IVE), (OR)
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REM	REMOVE(ABLE)
REP	REPAIR
REPL	REPLACE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISION(S), REVISED
RF	RESILIENT FLOORING
RFG	ROOFING
RFH	ROOF HATCH
RGDINS	RIGID INSULATION
RH	RIGHT HAND
RHMS	ROUND HEAD MACHINE SCREW
RHR	RIGHT HAND REVERSE
RHWS	ROUND HEAD WOOD SCREW
RL	ROOF LEADER
RLG	RAILING
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RR	RESTROOM
RS	ROUGH SAWN
RTF	RUBBER TILE FLOORING
RTU	ROOF TOP UNIT
RV	ROOF VENT
RVL	REVEAL
RVS	REVERSE (SIDE)
RVT	RIVET(ED)
RWD	REDWOOD
RWL	RAIN WATER LEADER
S	
S	SOUTH
S2S	SURFACED TWO SIDES
S4S	SURFACED FOUR SIDES
SA	SUPPLY AIR
SALV	SALVAGE
SAM	SELF-ADHERED MEMBRANE
SAT	SUSPENDED ACOUSTICAL TILE
SB	SPLASH BLOCK
SBSTR	SUBSTRATE
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCP	SCUPPER
SCRN	SCREEN
SD	STORM DRAIN
SDBL	SANDBLAST
SEC	SECONDS
SECT	SECTION
SEP	SEPERATE OR SEPERATION
SF	SQUARE FEET, STOREFRONT
SGL	SINGLE
SHR	SHOWER
SHT	SHEET(ING)
SHTG	SHEATHING
SHV	SHELVES(ING)
SIM	SIMILAR
SK	SINK
SKLT	SKYLIGHT
SLD	SEALED

SLDG	SLIDE(ING)
SLDR	SOLDER
SLNT	SEALANT
SLV	SLEEVE
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
SMLS	SEAMLESS
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPENSER
SNDINS	SOUND INSULATION
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SNT	SEALANT
SP	SPACES
SPC	SUSPENDED PLASTER CEILING
SPD	SOAP DISPENSER
SPEC	SPECIFICATION(S)
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
ST	STREET
STA	STATION
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STG	SEATING
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRAIGHT
STRUC	STRUCTURAL
STU	STRUCT
SUSP	SUSPENDED
SV	SHEET VINYL
SYMM	SYMMETRICAL
SYNTH	SYNTHETIC
SYS	SYSTEM
T	
T	TEMPERED, TOILET, TREAD
T24	TITLE 24
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
TB	THRU BOLT
TBE	THREADED BOTH ENDS
TD	TOWEL DISPENSER
TDR	TOWEL DISPENSER/RECEPTACLE
TEL	TELEPHONE
TEMP	TEMPORARY
TER	TERRAZZO
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
THD	THREAD(ED)
THERM	THERMAL
THK	THICK
THRES	THRESHOLD
THRU	THROUGH
TKBD	TACKBOARD
TMPD	TEMPERED
TO	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CURB OR TOP OF CONCRETE
TOF	TOP OF FOOTING
TOFF	TOP OF FINISH FLOOR
TOJ	TOP OF JOIST
TOL	TOLERANCE
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOPV	TOP OF PAVEMENT
TOS	TOP OF SHEATHING
TOSL	TOP OF SLAB
TOST	TOP OF STEEL
TOW	TOP OF WALL OR TOP OF WALK
TPD	TOILET PAPER DISPENSER
TPTN	TOILET PARTITION
TRANS	TRANSITION
TS	TUBE STEEL
TV	TELEVISION
TWLB	TOWEL BAR
TYP	TYPICAL
U	
UC	UNDERCUT
UGND	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
URM	UNREINFORCED MASONRY
UTIL	UTILITY
V	
VAR	VARIES
VB	VINYL BASE
VCT	VINYL COMPOSITION TITLE
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VF	VINYL FABRIC
VFAT	VINYL FACED ACOUSTIC TILE
VIF	VERIFY IN FIELD
VJ	V-JOINT(ED)
VNR	VENEER
VR	VAPOR RETARDER
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	
W	WEST
W.O.	WHERE OCCURS
W/	WITH
W/O	WITHOUT
W/W	WALL TO WALL
WBL	WOOD BLOCKING
WC	WATER CLOSET
WD	WOOD
WDP	WOOD PANELING
WDW	WINDOW
WF	WIDE FLANGE
WFS	WOOD FURRING STRIP
WGL	WIRED GLASS
WH	WATER HEATER
WH	WALL HUNG
WI	WROUGHT IRON
WID	WIDTH, WIDE
WLD	WELD(ED)
WM	WIRE MESH
WP	WATERPROOF(ING)
WPT	WORKING POINT
WR	WIRE ROPE
WS	WOOD SCREW
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
X	
XBRACE	CROSS BRACE
XFMR	TRANSFORMER
XSECT	CROSS SECTION
Y	
YCO	YARD CLEANOUT
YD	YARD

SUPPLEMENTAL GENERAL NOTES

1. THESE DRAWINGS DO NOT CONTAIN THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
2. LOCATIONS OF ALL UTILITIES SHOWN ARE APPROXIMATE AND CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID INTERCEPTING EXISTING PIPING OR CONDUITS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND TO PROTECT THEM FROM DAMAGE. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD ANY UNIDENTIFIED CONDITIONS BE DISCOVERED. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THIS WORK.
3. THESE DOCUMENTS AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF BCA ARCHITECTS, AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF BCA ARCHITECTS.
4. EACH BIDDER SHALL POSSESS AT THE TIME OF BID, A CLASS B OR THE APPROPRIATE CLASS C CONTRACTOR'S LICENSE PURSUANT TO PUBLIC CONTRACT CODE SECTION 3300 AND BUSINESS AND PROFESSIONS CODE SECTION 7028.15. THE SUCCESSFUL BIDDER MUST MAINTAIN THE LICENSE THROUGHOUT THE DURATION OF THIS CONTRACT.
5. FIRE SAFETY DURING CONSTRUCTION:
   A. GENERAL: FIRE SAFETY DURING CONSTRUCTION SHALL COMPLY WITH 2019 CALIFORNIA FIRE CODE (CFC) CHAPTER 33, PART 9, TITLE 24 CCR
   B. ACCESS ROADS: FIRE DEPARTMENT ACCESS ROADS SHALL BE ESTABLISHED AND MAINTAINED IN ACCORDANCE WITH CFC 503.
   C. WATER SUPPLY: WATER MAINS AND HYDRANTS SHALL BE OPERATIONAL IN ACCORDANCE WITH CFC 507.
   D. BUILDING ACCESS: ACCESS TO BUILDINGS FOR THE PURPOSE OF FIREFIGHTING SHALL BE PROVIDED. CONSTRUCTION MATERIAL SHALL NOT BLOCK ACCESS TO BUILDINGS, HYDRANTS OR FIRE APPLIANCES.
   E. ALTERATIONS OF BUILDINGS: SHALL COMPLY WITH APPLICABLE PROVISIONS OF SECTION CFC 1103.
   F. DEMOLITION OF BUILDINGS: SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF CFC CHAPTER 33.
   G. FIRE WATCH: MAINTAIN FIRE WATCH WHEN REQUIRED BY THE BUILDING OFFICIAL AND WHEN EXISTING FIRE PROTECTION SYSTEMS ARE SHUT DOWN FOR ALTERATIONS. FIRE WATCH SHALL REMAIN IN EFFECT UNTIL EXISTING FIRE PROTECTION SYSTEMS ARE RETURNED TO SERVICE OR AS ALLOWED BY THE BUILDING OFFICIAL.
6. PENETRATIONS IN FIRE RATED MATERIALS OR ASSEMBLIES SHALL BE RESTORED TO EQUAL RATING. FIRE STOP SYSTEMS AS LISTED BY UNDERWRITERS LABORATORIES SHALL BE INSTALLED PER FIRE RESISTANCE DIRECTORY. FIRE STOP SYSTEMS SHALL BE AS SPECIFIED.
7. NONRESIDENTIAL ENERGY STANDARDS COMPLIANCE STATEMENT (TITLE 24, PART 6):
   A. THE DESIGN INDICATED HEREIN COMPLIES WITH THE REQUIREMENTS OF THE ENERGY CONSERVATION STANDARDS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THE PROPOSED BUILDINGS WILL BE IN COMPLIANCE WITH THE ENERGY CONSERVATION STANDARDS PROVIDED THEY ARE BUILT ACCORDING TO THESE DRAWINGS AND SPECIFICATIONS AND PROVIDED ANY FUTURE IMPROVEMENTS ARE COMPLETED ACCORDING TO THE REQUIREMENTS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THESE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO INCLUDE ALL SIGNIFICANT ENERGY CONSERVATION FEATURES REQUIRED FOR COMPLIANCE WITH THE STANDARDS. BUILDING AREAS THAT ARE UNCONDITIONED AND/OR NOT SUBJECT TO THE STANDARDS ARE INDICATED ON THE DRAWINGS.
   B. ENVELOPE MANDATORY MEASURES:
      A. INSTALLED INSULATING MATERIALS SHALL HAVE BEEN CERTIFIED BY THE MANUFACTURER TO COMPLY WITH THE CALIFORNIA QUALITY STANDARDS FOR INSULATING MATERIAL.
      B. ALL INSULATING MATERIALS SHALL BE INSTALLED IN COMPLIANCE WITH THE FLAME SPREAD RATING AND SMOKE DENSITY REQUIREMENTS OF TITLE 24, PART 2, CALIFORNIA CODE OF REGULATIONS, SECTIONS 719
      C. ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE POTENTIAL AND OBSERVABLE SOURCES OF AIR LEAKAGE SHALL BE CAULKED, GASKETED, WEATHERSTRIPPED OR OTHERWISE SEALED.
      D. SITE CONSTRUCTED DOORS, WINDOWS, AND SKYLIGHTS SHALL BE CAULKED BETWEEN THE UNIT AND THE BUILDING, AND SHALL BE WEATHERSTRIPPED (EXCEPT FOR UNFRAMED GLASS DOORS AND FIRE DOORS).
      E. MANUFACTURED DOORS AND WINDOWS INSTALLED SHALL HAVE AIR INFILTRATION RATES CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS, SECTION 116(a)1.
      F. MANUFACTURED FENESTRATION PRODUCTS IN THE ENVELOPE OF THE BUILDING, INCLUDING, BUT NOT LIMITED TO, WINDOWS, SLIDING GLASS DOORS, FRENCH DOORS, SKYLIGHTS, CURTAIN WALLS, AND GARDEN WINDOWS MUST BE LABELED FOR U-VALUE IN ACCORDANCE WITH THE (NFRC) NATIONAL FENESTRATION RATING COUNCIL'S INTERIM U-VALUE RATING PROCEDURE.
      G. DEMISING WALL INSULATION SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF FRAMED WALLS (EXCEPT DOORS).
8. PROOF LOAD TESTS FOR EXPANSION TYPE ANCHOR BOLTS:
   A. ANCHOR DIAMETER REFERS TO THE THREAD SIZE FOR THE WEDGE CATEGORY AND TO THE ANCHOR OUTSIDE DIAMETER FOR THE SLEEVE CATEGORY.
   B. APPLY PROOF TEST LOADS TO WEDGE & SLEEVE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
   C. FOR SLEEVE INTERNALLY THREADED CATEGORIES, VERIFY THAT THE ANCHOR IS NOT PREVENTED FROM WITHDRAWING BY A BASEPLATE OR OTHER FIXTURES. IF RESTRAINT IS FOUND, LOOSEN AND SHIM OR REMOVE FIXTURE(S) PRIOR TO TESTING.
   D. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
   E. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
   F. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
      1. HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE. DROP-IN ANCHORS ARE ONLY TO BE TESTED WITH THIS METHOD.
      2. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS: WEDGE OR SLEEVE TYPE: ONE-HALF (1/2) TURN OF THE NUT. ONE-QUARTER (1/4) TURN OF THE NUT FOR THE 3/8 IN. SLEEVE ANCHOR ONLY.
   G. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
   H. ALL ANCHOR BOLTS OF THE EXPANSION TYPE (LOADED IN EITHER PULLOUT OR SHEAR) SHALL HAVE 50 PERCENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT ALLOWED BY THE TYPE OF SUBSTRATE AND DIAMETER OF BOLT LISTED BELOW UNDER TEST VALUES TABLE) PROOF TESTED IN TENSION TO TWICE THE ALLOWABLE TENSION LOAD. IF THERE ARE ANY FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 1910A.5.
   I. ALL BOLTS MUST HAVE ICC APPROVAL.
   J. ALL ANCHOR BOLTS OF THE EXPANSION TYPE SHALL BE ONE OF THE FOLLOWING:
      1. HILTI KB-TZ ANCHOR ICC NO. ESR 1917, REISSUED MAY 2021, SUBJECT TO RENEWAL MAY 2022
      2. HILTI KWIK BOLT TZ2, ESR-4266, SUBJECT TO RENEWAL DECEMBER 2021

MINIMUM TEST VALUES				
NORMAL WEIGHT OR LIGHTWEIGHT CONCRETE				
ANCHOR	WEDGE		SLEEVE	
DIA. (IN)	TORQUE (FT-LBS)	TORQUE (FT-LBS)	TENSION LOAD (LBS)	TORQUE (FT-LBS)
1/4	1050	5	540	4
3/8	1740	15	1680	35
1/2	1860	30	2410	60
5/8	3290	75	2590	100
3/4	5490	150	2900	120

9. POWDER-DRIVEN CONCRETE FASTENERS:
   A. GENERAL: USE POWDER DRIVEN CONCRETE FASTENERS FOR TENSION LOADS IS LIMITED TO SUPPORT OF MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT.
   B. ALLOWABLE LOADS: IN GENERAL, LOADS SHOULD BE LIMITED TO LESS THAN 100 POUNDS. HOWEVER GREATER LOADS MAY BE PERMITTED FOR SPECIAL CASES WHEN APPROVED BY THE CHECKING SUPERVISOR OR FIELD ENGINEER.
   C. TESTING: THE OPERATOR, TOOL, AND FASTENER SHALL BE PREQUALIFIED BY THE PROJECT INSPECTOR. HE SHALL OBSERVE THE TESTING OF THE FIRST 10 FASTENER INSTALLATIONS. A TEST "PULL-OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD, OR 200 POUNDS, WHICHEVER IS GREATER, SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS, EXCEPT THAT WHEN THE DESIGN LOAD EXCEEDS 100 POUNDS, ONE HALF OF THE PINS SHALL BE TESTED. SHOULD FAILURE OCCUR ON ANY PIN TESTED, ALL INSTALLATIONS MUST BE TESTED AND UNFAIR PINS REPLACED.
   D. ALL POWDER DRIVEN CONCRETE FASTENERS SHALL BE ONE OF THE FOLLOWING: HILTI, INC.
      1. DN PINS - WOOD PLATE - ICC NO. ESR 2379, REISSUED AUGUST 2020
         DN PINS - STEEL TRACK - ICC NO. ESR 2269, REISSUED FEBRUARY 2021
      2. ITW RAMSET/REDHEAD DRIVE PIN - WOOD PLATE - ICC NO. ESR 2690
         DRIVE PIN - STEEL TRACK - ICC NO. ESR 1955, REVISED MAY 2021
10. SPECIFICATIONS FOR AUTOMATIC END WELDED STUDS
    A. MATERIAL: AUTOMATIC END WELDED STUDS SHALL BE NELSON GRANULAR FLUX-FILLED SHEAR CONNECTOR OR ANCHOR STUDS (OR APPROVED EQUAL). STUDS SHALL BE MANUFACTURED OF G-1015 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A108.
    B. INSTALLATION: THE STUDS SHALL BE AUTOMATICALLY END WELDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN SUCH A MANNER AS TO PROVIDE COMPLETE FUSION BETWEEN THE END OF THE STUD AND THE PLATE. THERE SHOULD BE NO POROSITY OR EVIDENCE OF LACK OF FUSION BETWEEN THE WELDED END OF THE STUD AND THE PLATE. THE STUD SHALL DECREASE IN LENGTH DURING WELDING APPROXIMATELY 1/8" FOR 5/8" AND UNDER, AND 3/16" FOR OVER 5/8" DIAMETER. WELDING SHALL BE DONE ONLY BY QUALIFIED WELDERS APPROVED BY THE WELDING INSPECTOR.
    C. INSPECTION AND TESTS: INSPECTION, IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 2212A.3 AND 1704A.3.1 OF ALL THE SHOP AND FIELD WELDING OPERATIONS FOR THE AUTOMATIC END WELDED STUDS SHALL BE MADE BY A QUALIFIED WELDING INSPECTOR (APPROVED BY THE DIVISION OF THE STATE ARCHITECT). THE TYPE AND CAPACITY OF THE WELDING EQUIPMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE CHECKED AND APPROVED BY A WELDING INSPECTOR.
    D. AT THE BEGINNING OF EACH DAY'S WORK, A MINIMUM OF TWO TEST STUD WELDS SHALL BE MADE WITH THE EQUIPMENT TO BE USED TO METAL WHICH IS THE SAME AS THE ACTUAL WORK PIECE. THE TEST STUDS SHALL BE BEND TEST BY STRIKING THEM WITH A SUBJECTED TO A 900 HEAVY HAMMER. AFTER THE ABOVE TEST, THE WELD SECTION SHALL NOT EXHIBIT ANY TEARING OUT OR CRACKING.

SYMBOLS

N = PLAN NORTH ARROW ADDITIONAL ARROW INDICATES TRUE NORTH	
X = BUILDING SECTION NUMBER AX.X = SHEET NUMBER	ROOM NAME A119 — ROOM NAME AREA IDENTIFICATION: A = BUILDING OR AREA DESIGNATION 1 = FLOOR NUMBER 19 = ROOM NUMBER
X = WALL SECTION NUMBER AX.X = SHEET NUMBER	A — WINDOW, STOREFRONT, OR CURTAINWALL SEE WINDOW SCHEDULE
X = EXTERIOR ELEVATION NUMBER AX.X = SHEET NUMBER	A101A — DOOR NUMBER, SEE DOOR SCHEDULE
X = INTERIOR ELEVATION NUMBER AX.X = SHEET NUMBER N,S,E,W = INDICATES CARDINAL DIRECTION	08 2 11 — KEYNOTE 08 = SPECIFICATION DIVISIONAL PREFIX 2 = SPECIFICATION SUBSECTION PREFIX 11 = NOTE NUMBER
A — GRID LINE, FACE OF STRUCTURE	1 — REVISION
A — GRID LINE, CENTER OF STRUCTURE	102 36" x 24" x 24" LOCKABLE — CASEWORK TAG 102 = ARCHITECTURAL WOODWORK STANDARD (AWS) NUMBER 36" x 24" x 24" = WIDTH x HEIGHT x DEPTH LOCKABLE = MODIFYING NOTE NOTE: FOR BASE CABINETS, HEIGHT DOES NOT INCLUDE COUNTERTOP THICKNESS - REFER TO PLANS FOR COUNTERTOP TYPE
ELEVATION OR DATUM POINT	
WP — WORK POINT	41 — PATH OF EGRESS 41 = OCCUPANT LOAD STARTING POINT OF PATH OF TRAVEL TO EXIT MARKED BY DOT AT THE BEGINNING OF EGRESS LINE
REFERENCE DETAIL X = DETAIL DRAWING NUMBER AX.X = SHEET NUMBER	P — PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP
	S1 — SIGNAGE TAG
20 / AX.X — MATCH LINE AND AREA DESIGNATOR SHADED PORTION IS THE SIDE CONSIDERED	

GENERAL NOTES

1. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AND SHALL HAVE VISITED THE CONSTRUCTION SITE. HE/SHE SHALL BE FAMILIAR WITH THE CONDITIONS UNDER WHICH HE/SHE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. THE GENERAL CONTRACTOR SHALL NOT DISPUTE, COMPLAIN OR ASSERT THAT THERE IS ANY MISUNDERSTANDING IN REGARDS TO LOCATION, EXTENT, NATURE OR AMOUNT OF WORK TO BE PERFORMED UNDER THIS CONTRACT DUE TO THE CONTRACTOR'S FAILURE TO INSPECT THE SITE. BIDDERS SHALL NOTIFY THE ARCHITECT OF ANY CONDITIONS, REQUIRING WORK, WHICH ARE NOT COVERED IN THE CONTRACT DOCUMENTS.
2. THERE WILL BE NO SUBSTITUTION FOR SPECIFIED ITEMS WITHOUT PRIOR APPROVAL UNLESS OTHERWISE NOTED. REQUESTS FOR SUBSTITUTIONS SHALL BE MADE IN ACCORDANCE WITH GENERAL CONDITIONS & DIVISION 1
3. THE GENERAL BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS REQUIRED BY GOVERNING AGENCIES IN ORDER TO PERFORM THE WORK.
4. THE FINAL LOCATION OF ALL ELECTRICAL AND SIGNAL EQUIPMENT, PANEL BOARDS, FIXTURES, ETC., SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.
5. DEFINITIONS
   A. "TYPICAL" MEANS IDENTICAL FOR ALL CONDITIONS, UNLESS OTHERWISE NOTED.
   B. "SIMILAR" MEANS COMPARABLE CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATIONS.
   C. "PROVIDE" MEANS TO FURNISH AND INSTALL.
   D. "FURNISH" MEANS TO FURNISH AND OTHERS WILL INSTALL.
6. DIMENSIONING RULES:
   A. ALL HORIZONTAL DIMENSIONS SHALL BE TO CENTERLINE OF STUD OR COLUMN GRID LINE, U.O.N
   B. DIMENSIONS NOTED "CLEAR", "CLR", OR "MINIMUM", "MIN" MUST BE PRECISELY MAINTAINED.
   C. DIMENSIONS CAN NOT BE MODIFIED WITHOUT APPROVAL OF THE ARCHITECT UNLESS OTHERWISE NOTED.
   D. VERTICAL DIMENSIONS ARE FROM TOP OF FLOOR SLAB UNLESS OTHERWISE NOTED.
   E. DO NOT SCALE DRAWINGS. IF ANY ITEM OF WORK CANNOT BE LOCATED, DO NOT PROCEED WITH THE WORK WITHOUT THE ARCHITECT'S APPROVAL.
   F. DIMENSIONS MARKED "V.I.F." OR "VERIFY" SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
   G. VERIFY ALL ROUGH OPENING DIMENSIONS FOR FABRICATED ITEMS WITH THE MANUFACTURER PRIOR TO PROCEEDING WITH CONSTRUCTION.
   H. DOOR AND WINDOW OPENINGS SHALL BE LOCATED ADJACENT TO PERPENDICULAR WALL UNLESS DIMENSIONED OTHERWISE.
7. PROVIDE REQUIRED BACKING, BLOCKING, AND BRACING FOR ALL WALL - MOUNTED FIXTURES, ACCESSORIES AND EQUIPMENT.
8. VERIFY AND COORDINATE WALLS THAT MAY REQUIRE NON-TYPICAL THICKNESS OR FRAMING DUE TO ELECTRICAL, MECHANICAL, PLUMBING, STRUCTURAL AND/OR EQUIPMENT REQUIREMENTS.
9. ALL GLAZING SHALL CONFORM TO FEDERAL GLAZING REGULATIONS AND CHAPTER 24, CBC.
10. ALL CONTRACTORS SHALL REMOVE TRASH AND DEBRIS STEMMING FROM THEIR WORK ON A DAILY BASIS. PROJECT SITE SHALL BE MAINTAINED IN A CLEAN AND ORDERLY CONDITION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL LEFT-OVER MATERIALS, DEBRIS, TOOLS AND EQUIPMENT INVOLVED IN HIS OPERATIONS AT THE CONCLUSION OF THE INSTALLATION. HE SHALL LEAVE ALL AREAS CLEAN AND FREE FROM DUST.
12. HAZARDOUS MATERIALS: THE ARCHITECT AND THE ARCHITECT'S CONSULTANTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL, DISPOSAL OF OR EXPOSURE OF PERSONS TO ASBESTOS OR HAZARDOUS OR TOXIC SUBSTANCES IN ANY FORM AT THE PROJECT SITE. PROFESSIONAL SERVICES RELATED OR IN ANY WAY CONNECTED WITH THE INVESTIGATION, DETECTION, ABATEMENT, REPLACEMENT, USE, SPECIFICATION, OR REMOVAL OF PRODUCTS, MATERIALS, OR PROCESSES CONTAINING ASBESTOS OR HAZARDOUS OR TOXIC MATERIALS ARE BEYOND THE SCOPE OF THIS AGREEMENT.
13. THE GENERAL CONTRACTOR & SUBCONTRACTORS ARE RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES IN ALL AREAS OF NEW WORK PRIOR TO COMMENCEMENT OF EXCAVATION. EXISTING UTILITIES SHOWN ON THE DRAWING ARE APPROXIMATE ROUTING LOCATION AS BEST DETERMINED FROM EXISTING DRAWINGS AND THE SCHOOL DISTRICT, BUT SHOULD NOT BE CONSTRUED TO REPRESENT ALL THE EXISTING UNDERGROUND UTILITIES.
14. ALL TEMPORARY WORK SHALL BE CONSIDERED A PART OF THIS CONTRACT AND NO EXTRA CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS AND INTENT OF THE PROJECT.
15. ALL WALL PENETRATIONS TO EXTERIOR WALLS SHALL BE SEALED AIR/WATER TIGHT. ALL INTERIOR PENETRATIONS SHALL BE SEALED TO PROVIDE A PROFESSIONAL AND FINISHED APPEARANCE.
16. THE DRAWINGS AND SPECIFICATIONS DO NOT UNDERTAKE TO SHOW OR LIST EVERY ITEM TO BE PROVIDED, BUT RATHER TO DEFINE THE REQUIREMENTS FOR A FULL AND WORKING SYSTEM FROM THE STANDPOINT OF THE END USER. FOR THIS REASON, WHEN AN ITEM NOT SHOWN OR LISTED IS CLEARLY NECESSARY FOR PROPER USE CONTROL/ OPERATION OF EQUIPMENT WHICH IS SHOWN OR LISTED, PROVIDE ALL ITEMS WHICH WILL ALLOW THE SYSTEM TO FUNCTION PROPERLY AT NO INCREASE IN CONTRACT PRICE ON TIME.
17. THE DETAILS REFLECT THE DESIGN INTENT FOR TYPICAL CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND SHALL INCLUDE, IN HIS SCOPE. THE COST FOR COMPLETE FINISHED INSTALLATIONS, INCLUDING ANOMALIES, OF ALL TRADES.
18. ALL WORK SHALL CONFORM TO CALIFORNIA CODES, TRADE STANDARDS WHICH GOVERN EACH PHASE OF THE PROJECT, AND ALL APPLICABLE LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
19. THIS DRAWING SET SHALL BE USED IN CONJUNCTION WITH THE CSI FORMAT PROJECT MANUAL PUBLISHED IN BOOK FORM, COMBINED, THEY ARE THE "CONTRACT DOCUMENTS".
20. NO WORK SHALL COMMENCE WITH UNAPPROVED MATERIALS. ANY WORK DONE WITH UNAPPROVED MATERIALS AND EQUIPMENT IS AT THE CONTRACTOR'S RISK. SEE SPECIFICATIONS FOR SUBMITTAL AND SUBSTITUTION REQUIREMENTS.
21. CONSTRUCTION MATERIAL STORED ON THE SITE SHALL BE PROPERLY STACKED AND PROTECTED TO PREVENT DAMAGE OR DETERIORATION. FAILURE IN THIS REGARD MAY BE CAUSE FOR REJECTION OF MATERIAL AND/OR WORK. SECURITY OF MATERIALS ARE THE SOLE RESPONSIBILITY OF CONTRACTOR.
22. ALL EQUIPMENT/CABINETS SHALL BE FABRICATED FROM FIELD VERIFIED DIMENSIONS AND APPROVED SHOP DRAWINGS. COORDINATE MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT WITH THIS WORK.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE AND COSTS ATTRIBUTED TO RAIN WATER DAMAGE DURING THE DURATION OF THIS PROJECT.
24. PROTECT AREAS FROM DAMAGE WHICH MAY OCCUR DUE TO TEMPERATURES, WIND, DUST, WATER, ETC. PROVIDE AND MAINTAIN TEMPORARY BARRICADES, CLOSURE WALLS, ETC., AS REQUIRED DURING CONSTRUCTION.
25. MAINTAIN EXISTING PEDESTRIAN ACCESS ALONG EXISTING ADJACENT STREETS.
26. ALL PUBLIC IMPROVEMENTS SHALL BE MADE IN ACCORDANCE WITH THE LATEST ADOPTED CITY/COUNTY STANDARDS.
27. ALL TYPICAL DETAILS SHALL APPLY UNLESS NOTED OTHERWISE.
28. NOTIFY THE ARCHITECT IN WRITING AND SEEK CLARIFICATION IF ANY DISCREPANCIES OR OMISSIONS ARE FOUND. CONTRACTOR SHALL BE RESPONSIBLE FOR REWORK IF RELATED WORK IS CONTINUED AFTER A DISCREPANCY IS IDENTIFIED.
29. NEW FINISHES AND CONSTRUCTION SHALL BE PROTECTED BY THE CONTRACTOR FROM POTENTIAL DAMAGE CAUSED BY CONSTRUCTION ACTIVITY. DAMAGE TO FINISHES OR CONSTRUCTION SHALL BE REPAIRED OR REPLACED (OWNER'S DECISION) BY THE CONTRACTOR WITH IDENTICAL MATERIAL AND/OR FINISHES. CONTRACTOR SHALL MAKE AND MAINTAIN A PHOTOGRAPHIC RECORD NOTEBOOK WITH DATED/INDEXED PHOTOGRAPHS.
30. SEE ELECTRICAL DRAWINGS FOR INFORMATION RELATED TO TELECOMMUNICATION EQUIPMENT, POWER, AND LIGHTING FIXTURES AND EQUIPMENT. SEE ARCHITECTURAL PLANS, REFLECTED CEILING PLAN AND INTERIOR ELEVATIONS FOR COORDINATED EQUIPMENT LOCATIONS. IF NOT SHOWN, CONTACT ARCHITECT FOR REVIEW AND DECISION.
31. PROVIDE ACCESS DOORS REQUIRED FOR ACCESS TO CONCEALED MECHANICAL, PLUMBING, AND ELECTRICAL EQUIPMENT.
32. ALL NOTED WORK IS UNDERSTOOD TO BE NEW, UNLESS LABELED AS "(E)" OR "EXISTING"
33. CONTRACTOR OPERATIONS SHALL NOT BLOCK, HINDER, IMPEDE, OR OTHERWISE INHIBIT THE USE OF REQUIRED EXITS AT ANY TIME. CONTRACTORS SHALL MAINTAIN UNOBSTRUCTED ACECESS TO FIRE EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE PROTECTION FACILITIES, STAIRWAYS AND OTHER ACCESS ROUTES FOR FIER-FIGHTING EQUIPMENT OR PERSONNEL.
34. ALL WORK SHALL COMPLY WITH CFC CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P WHITMORE No. C 30345 Ren. 9/30/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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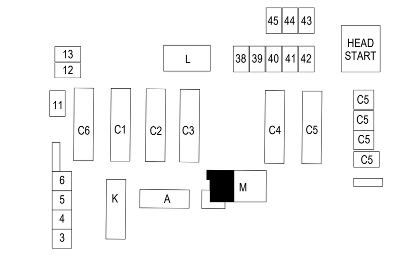
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

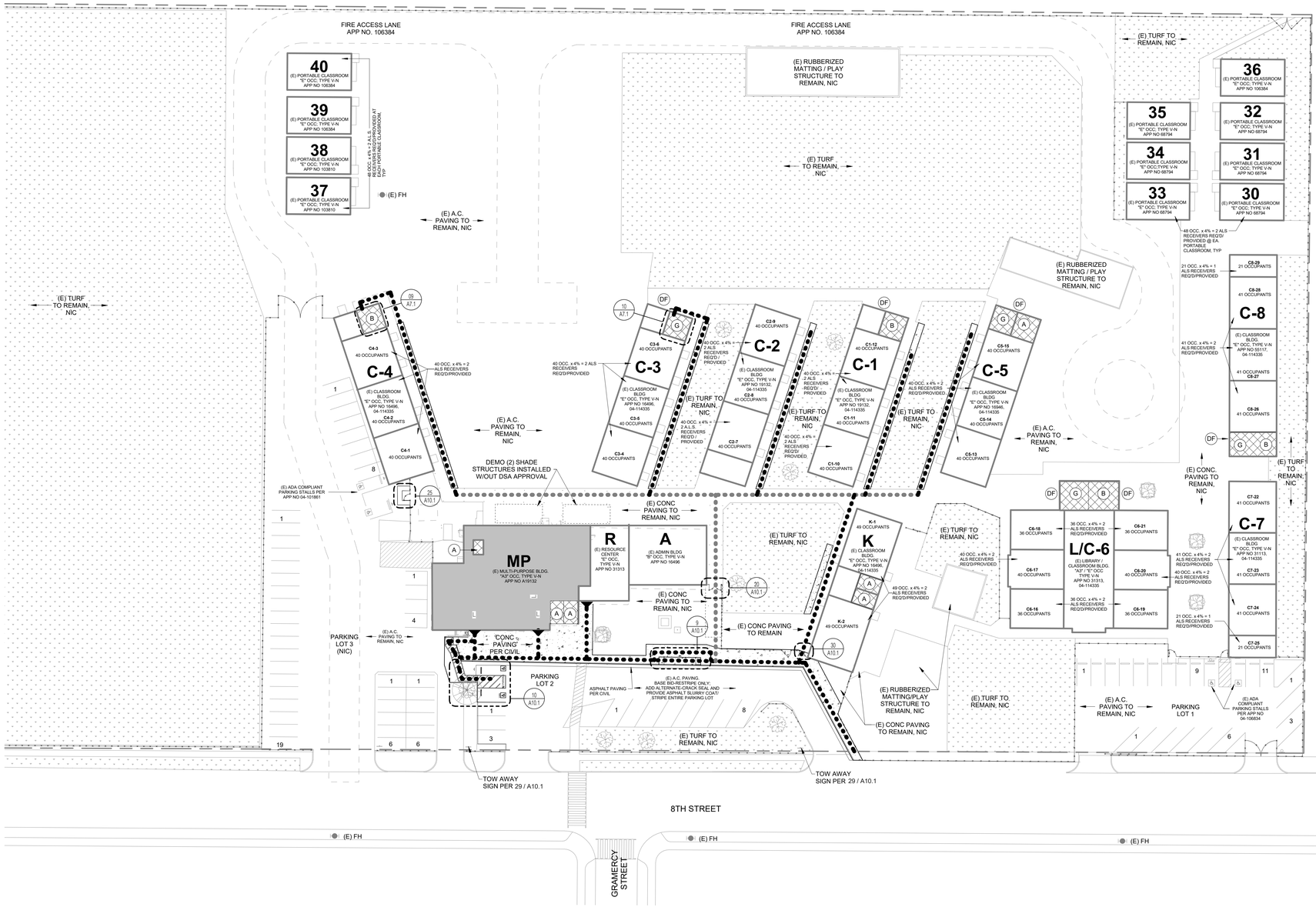
DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

GENERAL NOTES AND ABBREVIATIONS

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A0.2
Drawn / Checked	
Author / Checker	

PRINT DATE: 3/5/2022 3:25:45 PM
FILE PATH: C:\Users\gillianc\Documents\21029-Buena-Park-USD-Gilbert-MPR-A19_gilliancAY6SV.rvt



CODE ANALYSIS SITE PLAN 1" = 30'-0" 4

GENERAL NOTES

1. ALL (E) STRUCTURES AND ITEMS ON SITE ARE APPROXIMATE BASED ON DRAWINGS FROM OWNER.
2. GATES ALONG ACCESSIBLE ROUTE SHALL MEET DOOR REQUIREMENTS PER CBC SECTION 11B-404 INCLUDING PANIC HARDWARE AND 10" MIN. SMOOTH BOTTOM OR KICK PLATE.
3. FOR GRATINGS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WALKWAY IN THE PATH OF TRAVEL, GRID/OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" MAXIMUM IN THE DIRECTION OF TRAFFIC FLOW.
4. 36" WIDE CONTINUOUS DETECTABLE WARNING SHALL BE USED WHERE THE PEDESTRIAN PATH CROSSES OR ADJOINS A VEHICULAR WAY (SUCH AS A DRIVEWAY) TO WARN OF POTENTIAL HAZARDS AS PER CBC 11B-705.
5. ALL EXTERIOR OUTWARD SWINGING DOORS TO HAVE A MINIMUM 5'-0" LEVEL LANDING.
6. ALL BUILDING ENTRANCES AND EXTERIOR GROUND LEVEL EXITS SHALL BE ACCESSIBLE.
7. "MANUAL CANE BOLTS, MANUALLY LOCKING HARDWARE OR CHAINS NOT ALLOWED ON GATES WITH PANIC HARDWARE"

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

(BASED ON DSA PROCEDURE PR 15-01)

THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT WITH THE CBC HAVE BEEN IDENTIFIED AND THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR
A FINDING OF UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THE ITEMS SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

ACCESSIBLE PARKING

BASED ON CBC TABLE 11B-208.2 "PARKING SPACES" AND 11B-208.2.4 "VAN PARKING SPACES"

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES	MINIMUM NUMBER OF REQUIRED VAN PARKING SPACES
1 TO 25	1	1 FOR EVERY SIX OR FRACTION OF SIX PARKING SPACES REQ'D BY CBC 11B-208.2
26 TO 50	2	
51 TO 75	3	
76 TO 100	4	
101 TO 150	5	
PARKING LOT 1		
TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
20	1 REQ'D/1 PROVIDED	1 REQUIRED/1 PROVIDED
PARKING LOT 2		
TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
11	1 REQUIRED/1 PROVIDED	1 REQUIRED/1 PROVIDED
PARKING LOT 3		
TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
43	2 REQUIRED/2 PROVIDED	1 REQUIRED/1 PROVIDED

DSA APPLICATION CERTIFICATION

BUILDING NO	APP NO	CERTIFICATION STATUS
A	16496	DSA-APP'D 11/26/1957
R	31313	DSA-APP'D 10/2/1968
MP	19132	DSA-APP'D 9/28/1959
C-1, C-2	19132	DSA-APP'D 9/28/1959
C-3, C-4, C-5, K	16496	DSA-APP'D 11/26/1957
C-6/LIBRARY, C-7	31313	DSA-APP'D 10/2/1968
C-8	55117	03/18/2004
PORTABLE CLASSROOM 30, 31, 32, 33, 34, 35	68794	10/29/2003
PORTABLE CLASSROOM 37, 38	103810	1/12/2005
PORTABLE CLASSROOM 36, 39, 40	106384	5/23/2014

LEGEND

(E) BUILDING, NOT UNDER SCOPE OF WORK

BUILDING UNDER SCOPE OF WORK

RESTROOM FACILITIES:
G GIRLS' W GIRLS' A ALL-GENDER
B BOYS' M BOYS' DF (E) ACCESSIBLE DRINKING FOUNTAIN PER APP # 04-102455

CONCRETE SIDEWALK EXTENSION PER 12 / A10.1

NOTE:
SCOPE INDICATED IS CORRECTIVE WORK AS REQ'D TO PROVIDE AN ACCESSBLE PATH OF TRAVEL FOR DSA APP NO 04-114335

PROPERTY LINE

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHER-WISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAIN-TAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MIN. AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

(E) ACCESSIBLE PATH OF TRAVEL PER A#04-106384

ACCESSIBLE EXTERIOR EXIT DOORS, ENTRANCES/EGRESS

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REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE C 30345 03/09/22 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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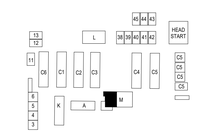
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT

6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

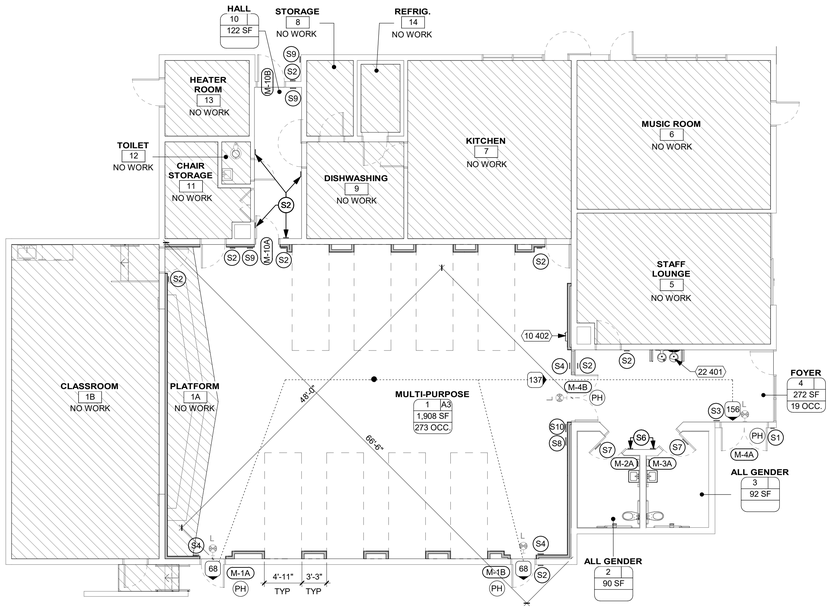
DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

CODE ANALYSIS SITE PLAN

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A0.3
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:25:49 PM
FILE PATH: C:\Users\gillianc\Documents\21029-Buena-Park-USD-Gilbert-MPR-A19_gilliancAYESV.rvt



GENERAL NOTES

1. WHERE OCCUPANT LOAD SIGN IS REQUIRED, THE SIGN SHALL BE POSTED NEAR THE MAIN EXIT FROM THE ROOM.
2. REQUIRED MEANS OF EGRESS SHALL BE MAINTAINED DURING CONSTRUCTION AND DEMOLITION PER CFC 3311.2.
3. MEANS OF EGRESS ILLUMINATION SHALL BE PROVIDED PER CFC 1013.3.
4. NUMBER OF EXITS SHOWN COMPLY WITH THE MINIMUM REQUIREMENTS SET FORTH IN CBC SECTION 1006.2. WHEN THERE ARE MORE THAN ONE REQUIRED EXIT, THE EXITS SHALL BE LOCATED PER SECTION 1007.1.1. SEE CALCS BELOW.
5. NO EXIT DOOR SHALL BE LESS THAN 32" CLEAR WIDTH.

OCCUPANCY CLASS

ROOM #	ROOM NAME	OCCUPANCY CLASS	SQ. FT. (NET)
2	ALL GENDER		90 SF
3	ALL GENDER		92 SF
4	FOYER		272 SF
10	HALL		122 SF
			575 SF
1	MULTI-PURPOSE	A3	1,908 SF
A3			1,908 SF
TOTAL AREA (NET)			2,484 SF

OCCUPANT LOAD CHART

ROOM NUMBER	ROOM NAME	FUNCTION OF SPACE (CBC TABLE 1004.1.2)	SQ. FT. (NET)	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
1	MULTI-PURPOSE	Assembly Concentrated (chairs only - not fixed)	1,908 SF	7	273
2	ALL GENDER	(none)	90 SF		
3	ALL GENDER	(none)	92 SF		
4	FOYER	(none)	272 SF	15	19
10	HALL	(none)	122 SF		
			2,484 SF		292

EXIT WIDTH CALCULATIONS

NOTE: EXIT WIDTH CALCULATIONS ARE PER CBC 1005.3.2. IF CALCULATED EXITING WIDTH IS LESS THAN 32", THEN 32" IS USED AS THE MINIMUM VALUE PER CBC 11B-403.5.1 (EXCEPTION 1). REFER TO "EXIT WIDTH PROVIDED" COLUMN BELOW AND DOOR SCHEDULE ON SHEET A9.1 FOR MORE INFORMATION.

MARK	DOOR WIDTH	EXITING OCCUPANTS	MINIMUM EXIT WIDTH REQUIRED (EXITING OCCUPANTS *.2)	EXIT WIDTH PROVIDED
M-1A	3'-0"	68	32"	32"
M-1B	3'-0"	68	32"	32"
M-2A	3'-0"	0	32"	32"
M-3A	3'-0"	0	32"	32"
M-4A	6'-0"	156	32"	68"
M-4B	6'-0"	137	32"	68"

SIGNAGE LEGEND

- S1 ACCESSIBLE ENTRANCE SIGN, SEE DETAIL 9 / A10.3
- S2 ROOM IDENTIFICATION SIGN, SEE DETAIL 10 / A10.3
- S3 EXIT SIGN, SEE DETAIL 11 / A10.3
- S4 EXIT ROUTE SIGN, SEE DETAIL 11 / A10.3
- S5 MAXIMUM OCCUPANCY SIGN, SEE DETAIL 13 / A10.3
- S6 ALL GENDER WALL MOUNTED SIGN, SEE DETAIL 14 / A10.3
- S7 ALL GENDER REST ROOM DOOR SIGN, SEE DETAIL 15 / A10.3
- S8 ASSISTED LISTENING DEVISE SIGN, SEE DETAIL 19 / A10.3
- S9 INACCESSIBLE EXIT SIGN, SEE DETAIL 20 / A10.3
- S10 OCCUPANT LOAD SIGN 18 / A10.3

ALS DEVICE RECEIVER CALCULATION

ROOM NAME	ROOM NO	OCCUPANTS	RECEIVERS REQ'D.
MULTI-PURPOSE	04	144 OCC.	6 RECEIVERS REQ'D.

NOTE:
144 OCC X 4% = 6 ASSISTICE LISTENING DEVICE RECEIVERS REQ.'D / PROVIDED OF THE 6 ALS DEVICE RECEIVERS PROVIDED, 25% OR RECEIVERS SHALL BE HEARING-AID COMPATIBLE IN ACCORDANCE WITH SECTION 11B-706.3 = 2 HEARING-AID COMPATIBLE RECIEVERS REQUIRED

LEGEND

WORKROOM
A101 B
1,500 SF
10 OCC.
{15}

AREA IDENTITY/ CODE ANALYSIS
WORKROOM = ROOM NAME
A101 = ROOM NUMBER
B = OCCUPANCY CLASS (CBC 302)
1,500 SF = FLOOR AREA
10 = OCCUPANT LOAD
{15} = OCCUPANT LOAD PLUS ANCILLARY AS OCCURS

PATH OF EGRESS
41 = OCCUPANT LOAD (STARTING POINT OF PATH OF TRAVEL TO EXIT MARKED BY DOT AT THE BEGINNING OF EGRESS LINE)

PH — PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP

NOT IN CONTRACT

ILLUMINATED EXIT SIGN
EXIT SIGNAGE TO ACCOMPANY ALL ILLUMINATED EXIT SIGNS.
L = LOW LEVEL ILLUMINATED EXIT SIGN (WHERE OCCURS)

ILLUMINATED EXIT SIGN
EXIT SIGNAGE TO ACCOMPANY ALL ILLUMINATED EXIT SIGNS.
L = LOW LEVEL ILLUMINATED EXIT SIGN (WHERE OCCURS)

EXITING FLOOR PLAN 1/8" = 1'-0" 10

DSA STAMP
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE, No. 30345, Exp. 12/31/23, STATE OF CALIFORNIA; DATE SIGNED: 12/15/2021	

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
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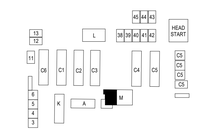
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

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EXITING FLOOR PLAN

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A0.4
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:25:52 PM
FILE PATH: C:\Users\gillianc\Documents\21029-Buena-Park-USD-Gilbert-MPR-A19_gillianc\NYSN.rvt

GENERAL NOTES:

1. WORK SHOWN HEREON SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," LATEST EDITION AND SUPPLEMENTS, THE 2019 CALIFORNIA BUILDING CODE (EXCAVATION AND GRADING), AND CITY OF BUENA PARK LOCAL ORDINANCES AS APPLICABLE.
2. EXISTING TOPOGRAPHY SHOWN HEREON WAS TAKEN FROM A SURVEY DATED SEPTEMBER 8, 2021 BY HAHN & ASSOCIATES, INC.
3. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
4. PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL HIRE A LICENSED LAND SURVEYOR TO VERIFY THAT THE ELEVATIONS SHOWN ON THE GRADING PLAN AT THE JOIN TO THE EXISTING IMPROVEMENTS MATCHES THE EXISTING ELEVATIONS IN THE FIELD. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES, AND SHALL NOT BEGIN CONSTRUCTION, IN THE AREAS OF DISCREPANCIES UNTIL THE CHANGED CONDITIONS HAVE BEEN EVALUATED.
5. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
6. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.
7. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
8. IF AT ANY TIME DURING GRADING OPERATIONS, ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, GRADING IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED.
9. THE PROPOSED GRADE IS THE FINAL GRADE AND NOT THE ROUGH GRADE. THE CONTRACTOR SHALL SUBTRACT THE THICKNESS OF THE PAVED SECTION AND/OR LANDSCAPE TOPSOIL SECTION TO ARRIVE AT THE ROUGH GRADE ELEVATION.
10. STRAIGHT GRADE SHALL BE MAINTAINED BETWEEN CONTOUR LINES AND SPOT ELEVATIONS UNLESS OTHERWISE SHOWN ON THE PLANS.
11. ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT APPROVED DISPOSAL SITES. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FOR THE TRANSPORTATION OF MATERIAL TO AND FROM THE SITE.
12. ALL FILL SOILS OR SOILS DISTURBED OR OVEREXCAVATED DURING CONSTRUCTION SHALL BE COMPACTED NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D-1557.
13. CONSTRUCTION STAKING FOR IMPROVEMENTS SHOWN ON THESE PLANS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR.
14. THE CONTRACTOR SHALL REPLACE ALL EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING, INCLUDING PERMANENT TRENCH RESURFACING.
15. CONTRACTOR TO CONTACT UNDERGROUND SERVICE ALERT (800-227-2600) PRIOR TO EXCAVATION.
16. ALL DIMENSIONS ARE IN FEET OR DECIMALS THEREOF.
17. ALL CURB DIMENSIONS AND RADII ARE TO PAVEMENT FACE OF CURB.
18. CONTRACTOR TO BE AWARE OF ALL OVERHEAD LINES AT ALL TIMES, SO AS NOT TO DISTURB THEM.
19. WATER SHALL BE PROVIDED ONSITE AND USED TO CONTROL DUST DURING CONSTRUCTION OPERATIONS.
20. CONTRACTOR SHALL OBTAIN ANY NECESSARY PERMITS FROM THE CITY OF BUENA PARK FOR ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
21. BLANKET PROTECTION SHALL BE PROVIDED FOR ALL UTILITY PIPES AND CONDUITS UNDER DRIVEWAYS, ROADWAYS, PARKING LOTS, AND OTHER VEHICULAR PATH OF TRAVEL PER APWA STANDARD PLAN 225-1 WHERE THE MINIMUM COVER OVER THE PIPES AND CONDUITS IS LESS THAN 36".
22. CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES SUCH AS MANHOLE COVERS, CLEAN OUTLET COVERS, METER BOXES, PULL BOXES, VALVE BOXES, AREA DRAINS, CATCH BASINS, FIRE HYDRANTS AND OTHER SURFACE UTILITIES TO NEW FINISH GRADE. NOT ALL EXISTING SURFACE UTILITIES MAY HAVE BEEN IDENTIFIED ON THESE PLANS THAT MAY REQUIRE ADJUSTMENT TO NEW GRADE, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTEND OF WORK REQUIRED.

LEGEND:

GENERAL

- LIMIT OF WORK
- PROPERTY LINE

ANNOTATION

- 100.00XX — PROPOSED SURFACE ELEVATION/UTILITY ELEVATION
- (100.00)XX — EXISTING SURFACE ELEVATION/UTILITY ELEVATION
- XX — CONSTRUCTION NOTE
- 2.0% — FLOW (DIRECTION AND GRADE)
- 2:1 — SLOPE (DIRECTION AND RUN:RISE)

SITE

- BACK OF CURB/FACE OF CURB

EROSION CONTROL

- GRAVEL BAGS
- FIBER ROLL
- EXISTING DRAINAGE FLOW DIRECTION

GRADING

- 100 — PROPOSED MAJOR CONTOUR
- 102 — PROPOSED MINOR CONTOUR
- FLOW LINE
- CB — GRADE BREAK LINE
- R — RIDGE LINE
- SAWCUT / JOIN LINE
- CHAINLINK FENCE

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON THE CALIFORNIA STATE PLANE COORDINATE SYSTEM – NAD 83 (2011) ZONE 5, DERIVED FROM OBSERVATIONS TAKEN ON SEPTEMBER 8, 2021, USING SOPAC'S CALIFORNIA REAL TIME NETWORK. THE BEARING BETWEEN CORS "TORP" AND "SKYB", BEING N10°38'40"W, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCHMARK:

THE ELEVATION OF 72.907' ON BENCH MARK NO. 1A-147-05 (DESCRIBED BY OCS 2005 – FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "1A-147-05", SET IN THE SOUTHEASTERLY CORNER OF A 4.0 FT. BY 15.0 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHEASTERLY PORTION OF THE INTERSECTION OF ARTESIA BOULEVARD AND WESTERN AVENUE, 42 FT. NORTHERLY OF THE CENTERLINE OF ARTESIA AND 61 FT. EASTERLY OF THE CENTERLINE OF WESTERN. MONUMENT IS SET LEVEL WITH THE SIDEWALK.) NAVD 1988 DATUM, 1995 ADJUSTMENT, AS SHOWN IN COUNTY OF ORANGE VERTICAL CONTROL DATA SHEET WAS USED AS ELEVATION DATUM FOR THIS SURVEY.

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	(N)	NORTH
BW	BACK OF WALK	NTS	NOT TO SCALE
BLDG	BUILDING	PA	PLANTER AREA
BM	BENCH MARK	POC	POINT OF CONNECTION
BOS	BOTTOM OF STAIRS	PIV	POST INDICATOR VALVE
BMP	BEST MANAGEMENT PRACTICES	PCC	PORTLAND CEMENT CONCRETE
CB	CATCH BASIN	PRV	PRESSURE REDUCING VALVE
CI	CAST IRON	PVC	POLYVINYL CHLORIDE
CL, ℄	CENTER LINE	PL, ⅊	PROPERTY LINE
CMU	CONCRETE MASONRY UNIT	R=	RADIUS
CO	CLEANOUT	RCIP	RECTANGULAR CAST IRON PIPE
CONC	CONCRETE	RD	ROOF DRAIN
CF	CURB FACE	RW, R/W	RIGHT-OF-WAY
DW	DOMESTIC WATER	(S)	SOUTH
(E)	EAST	S=	SLOPE EQUALS
EG	EDGE OF GUTTER	SD	STORM DRAIN
EL., ELEV	ELEVATION	SSMH	SANITARY SEWER MANHOLE
ELEC	ELECTRIC, ELECTRICAL	SS	SANITARY SEWER
EX., EXIST.	EXISTING	STD	STANDARD
FDC	FIRE DEPARTMENT CONNECTION	SDMH	STORM DRAIN MANHOLE
FF	FINISHED FLOOR	TC	TOP OF CURB
FG	FINISHED GRADE (LANDSCAPE)	TEL	TELEPHONE
FS	FINISHED SURFACE (HARDSCAPE)	TG	TOP OF GRATE
FH	FIRE HYDRANT	TOS	TOP OF STAIRS
FL	FLOW LINE	TW	TOP OF WALL
FT	FOOT OR FEET	TS	TRAFFIC SIGNAL
FU	FIXTURE UNITS	TSB	TRAFFIC SIGNAL BOX
GV	GATE VALVE	TYP	TYPICAL
FW	FIRE WATER	TV	TELEVISION
GPM	GALLONS PER MINUTE	V.I.F.	VERIFY IN FIELD
HDPE	HIGH DENSITY POLYETHYLENE	VLT	VAULT
HP, (HP)	HIGH POINT	VCP	VITRIFIED CLAY PIPE
INV.	INVERT	(W)	WEST
LP, (LP)	LOW POINT	W	WATER
MAX.	MAXIMUM	WM	WATER METER
MIN.	MINIMUM	WV	WATER VALVE
MH	MANHOLE		

LEGEND:

- ASPHALT CONCRETE PAVEMENT
- CONCRETE PAVEMENT (CONCRETE MIX 560-C 3250)

PROJECT DIRECTORY:

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KPFF CONSULTING ENGINEERS
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FAX: 949.252.8082
CONTACT: JESUS PEREZ

SHEET INDEX:

CIVIL DRAWINGS	
C0.01	TITLE SHEET
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.30	GRADING PLAN
C1.40	PAVING PLAN
C5.00	CIVIL DETAILS

CALIFORNIA 811
CALL UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA FOR UNDERGROUND LOCATING 48 HOURS BEFORE YOU DIG!
www.digalert.org

IMPORTANT NOTICE
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIGALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIGALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 811 TWO WORKING DAYS BEFORE YOU DIG

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APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
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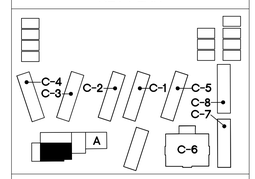
KEY PLAN



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

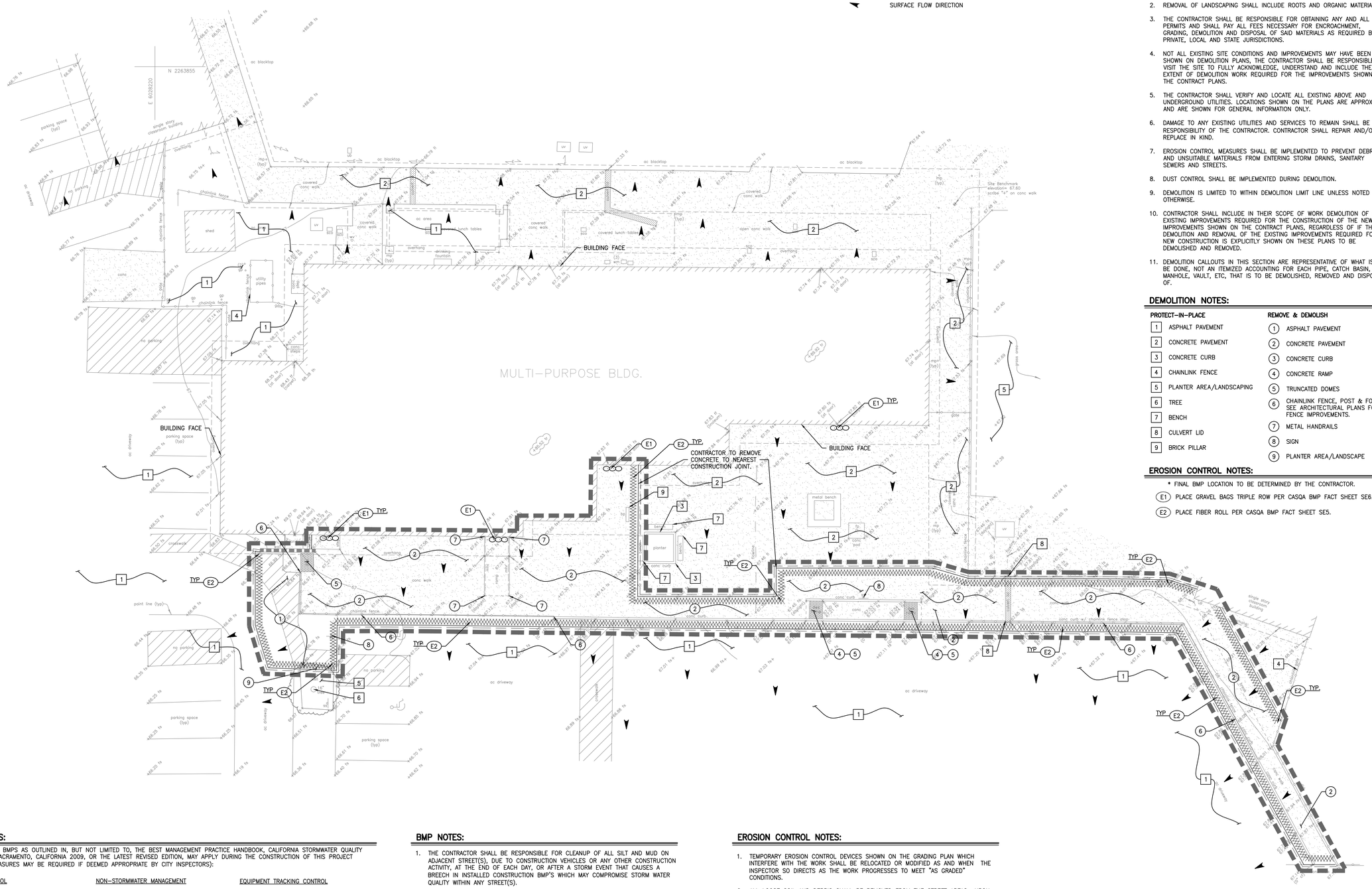
CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

TITLE SHEET

Date 03/04/2022	Project Number 2100113
Scale AS NOTED	Drawing Number C0.01
Drawn TN	Checked JP

LEGEND:

- LIMIT OF WORK
- GRAVEL BAGS
- FIBER ROLL
- SURFACE FLOW DIRECTION



GENERAL DEMOLITION NOTES:

1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN TO BE PROTECTED, RELOCATED AND/OR SALVAGED.
2. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
4. NOT ALL EXISTING SITE CONDITIONS AND IMPROVEMENTS MAY HAVE BEEN SHOWN ON DEMOLITION PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTENT OF DEMOLITION WORK REQUIRED FOR THE IMPROVEMENTS SHOWN ON THE CONTRACT PLANS.
5. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
7. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
8. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
9. DEMOLITION IS LIMITED TO WITHIN DEMOLITION LIMIT LINE UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK DEMOLITION OF ALL EXISTING IMPROVEMENTS REQUIRED FOR THE CONSTRUCTION OF THE NEW IMPROVEMENTS SHOWN ON THE CONTRACT PLANS, REGARDLESS OF IF THE DEMOLITION AND REMOVAL OF THE EXISTING IMPROVEMENTS REQUIRED FOR NEW CONSTRUCTION IS EXPLICITLY SHOWN ON THESE PLANS TO BE DEMOLISHED AND REMOVED.
11. DEMOLITION CALLOUTS IN THIS SECTION ARE REPRESENTATIVE OF WHAT IS TO BE DONE, NOT AN ITEMIZED ACCOUNTING FOR EACH PIPE, CATCH BASIN, MANHOLE, VAULT, ETC, THAT IS TO BE DEMOLISHED, REMOVED AND DISPOSED OF.

DEMOLITION NOTES:

PROTECT-IN-PLACE		REMOVE & DEMOLISH	
1	ASPHALT PAVEMENT	1	ASPHALT PAVEMENT
2	CONCRETE PAVEMENT	2	CONCRETE PAVEMENT
3	CONCRETE CURB	3	CONCRETE CURB
4	CHAINLINK FENCE	4	CONCRETE RAMP
5	PLANTER AREA/LANDSCAPING	5	TRUNCATED DOMES
6	TREE	6	CHAINLINK FENCE, POST & FOOTING. SEE ARCHITECTURAL PLANS FOR FENCE IMPROVEMENTS.
7	BENCH	7	METAL HANDRAILS
8	CULVERT LID	8	SIGN
9	BRICK PILLAR	9	PLANTER AREA/LANDSCAPE

EROSION CONTROL NOTES:

* FINAL BMP LOCATION TO BE DETERMINED BY THE CONTRACTOR.

E1 PLACE GRAVEL BAGS TRIPLE ROW PER CASQA BMP FACT SHEET SE6.

E2 PLACE FIBER ROLL PER CASQA BMP FACT SHEET SE5.

BMP NOTES:

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA 2009, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTORS):

EROSION CONTROL

EC1-SCHEDULING
EC2-PRESERVATION OF EXISTING VEGETATION
EC3-HYDRAULIC MULCH
~~EC4-HYDROSEEDING~~
~~EC5-SOIL BINDERS~~
~~EC6-STRAW MULCH~~
EC7-GEOTEXTILES
~~EC8-WOOD MULCHING~~
~~EC9-EARTH DIKES AND DRAINAGE SWALES~~
~~EC10-VELOCITY DISSIPATION DEVICES~~
~~EC11-SLOPE DRAINS~~
~~EC12-STREAMBANK STABILIZATION~~
~~EC13-POLYCRYLAMIDE~~

TEMPORARY SEDIMENT CONTROL

~~SE1-SILT FENCE~~
~~SE2-SEDIMENT BASIN~~
~~SE3-SEDIMENT TRAP~~
~~SE4-CHECK DAM~~
SE5-FIBER ROLLS
SE6-GRAVEL BAG BERM
~~SE7-STREET SWEEPING AND VACUUMING~~
~~SE8-SANDBAG BARRIER~~
~~SE9-STRAW BALE BARRIER~~
~~SE10-STORM DRAIN INLET PROTECTION~~
~~SE11-CHEMICAL TREATMENT~~

NON-STORMWATER MANAGEMENT

NS1-WATER CONSERVATION PRACTICES
~~NS2-DEWATERING OPERATIONS~~
~~NS3-PAVING AND GRINDING OPERATIONS~~
~~NS4-TEMPORARY STREAM CROSSING~~
~~NS5-CLEAR WATER DIVERSION~~
~~NS6-ILLICIT CONNECTION/DISCHARGE~~
~~NS7-POTABLE WATER/IRRIGATION~~
~~NS8-VEHICLE AND EQUIPMENT CLEANING~~
~~NS9-VEHICLE AND EQUIPMENT FUELING~~
~~NS10-VEHICLE AND EQUIPMENT MAINTENANCE~~
~~NS11-PILE DRIVING OPERATIONS~~
NS12-CONCRETE CURING
NS13-CONCRETE FINISHING
~~NS14-MATERIAL OVER WATER~~
~~NS15-DEMOLITION ADJACENT TO WATER~~
~~NS16-TEMPORARY BATCH PLANTS~~

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL

WM1-MATERIAL DELIVERY AND STORAGE
WM2-MATERIAL USE
~~WM3-STOCKPILE MANAGEMENT~~
WM4-SPILL PREVENTION AND CONTROL
WM5-SOLID WASTE MANAGEMENT
WM6-HAZARDOUS WASTE MANAGEMENT
~~WM7-CONTAMINATED SOIL MANAGEMENT~~
WM8-CONCRETE WASTE MANAGEMENT
WM9-SANITARY/SEPTIC WASTE MANAGEMENT
WM10-LIQUID WASTE MANAGEMENT

EQUIPMENT TRACKING CONTROL

TC1-STABILIZED CONSTRUCTION ENTRANCE/EXIT
~~TC2-STABILIZED CONSTRUCTION ROADWAY~~
~~TC3-ENTRANCE/OUTLET TIRE WASH~~

WIND EROSION CONTROL

WE1-WIND EROSION CONTROL

BMP NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL SILT AND MUD ON ADJACENT STREET(S), DUE TO CONSTRUCTION VEHICLES OR ANY OTHER CONSTRUCTION ACTIVITY, AT THE END OF EACH DAY, OR AFTER A STORM EVENT THAT CAUSES A BREECH IN INSTALLED CONSTRUCTION BMP'S WHICH MAY COMPROMISE STORM WATER QUALITY WITHIN ANY STREET(S).
2. ALL STOCKPILES OF SOIL AND/OR BUILDING MATERIALS THAT ARE INTENDED TO BE LEFT FOR A PERIOD GREATER THAN SEVEN CALENDAR DAYS ARE TO BE COVERED. ALL REMOVABLE BMP DEVICES SHALL BE IN PLACE AT THE END EACH WORKING DAY WHEN FIVE DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
3. A CONCRETE WASHOUT SHALL BE PROVIDED ON ALL PROJECTS WHICH PROPOSE THE CONSTRUCTION OF ANY CONCRETE IMPROVEMENTS WHICH ARE TO BE POURED IN PLACE ON SITE.
4. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER AFTER EACH RUN-OFF PRODUCING RAINFALL OR AFTER ANY MATERIAL BREACH IN EFFECTIVENESS.
5. ALL SLOPES THAT ARE CREATED OR DISTURBED BY CONSTRUCTION ACTIVITY MUST BE PROTECTED AGAINST EROSION AND SEDIMENT TRANSPORT AT ALL TIMES.
6. THE STORAGE OF ALL CONSTRUCTION MATERIALS AND EQUIPMENT MUST BE PROTECTED AGAINST ANY POTENTIAL RELEASE OF POLLUTANTS INTO THE ENVIRONMENT.

EROSION CONTROL NOTES:

1. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE GRADING PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES TO MEET "AS GRADED" CONDITIONS.
2. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR
3. WHEN THE INSPECTOR SO DIRECTS, A 12-INCH BERM SHALL BE MAINTAINED ALONG THE TOP OF THE SLOPE OF THOSE FILLS ON WHICH GRADING IS NOT IN PROGRESS.
4. STORM AND SEWER DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHALL BE PLUGGED WITH SANDBAGS.
5. EXCEPT WHEN THE INSPECTOR DIRECTS OTHERWISE, ALL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS FORECAST, AND SHALL BE MAINTAINED DURING THE RAINY SEASON (OCTOBER 15 TO APRIL 15).
6. SANDBAGS SHALL BE STOCKPILED ON SITE, READY TO BE PLACED IN POSITION WHEN RAIN IS FORECAST, OR WHEN THE INSPECTOR SO DIRECTS.
7. A "STANDBY EMERGENCY CREW" SHALL BE ALERTED BY THE PERMITTEE OR THE CONTRACTOR TO PERFORM EMERGENCY WORK DURING RAINSTORMS. THE PARTY TO BE CONTACTED IS:
   NAME: _____ (TO BE FILLED IN BY CONTRACTOR)
   PHONE NUMBER: _____

N

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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DATE: 03/11/2022

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ALI KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA

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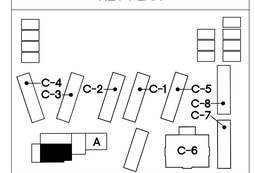
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
BIDDING	
CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

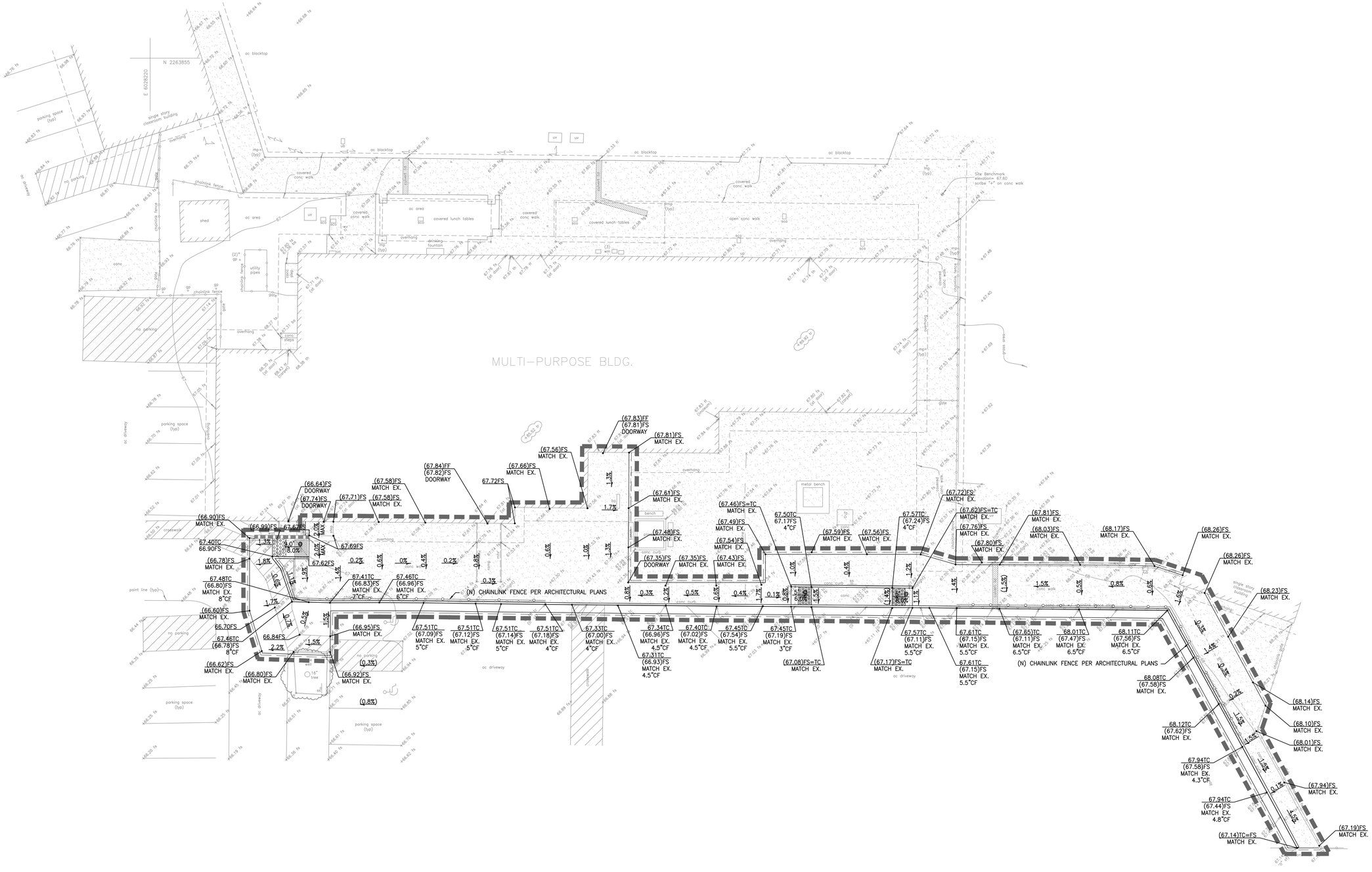
CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

EROSION CONTROL AND DEMOLITION PLAN

Date	Project Number
03/04/2022	2100113
Scale	Drawing Number
AS NOTED	C1.10
Drawn TN	Checked JP

LEGEND:

- LIMIT LINE OF GRADING
- SAWCUT
- CHAINLINK FENCE



PLAN
SCALE: 1" = 10'-0"
GRAPHIC SCALE

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DATE: 03/11/2022

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA

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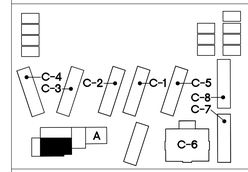
NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



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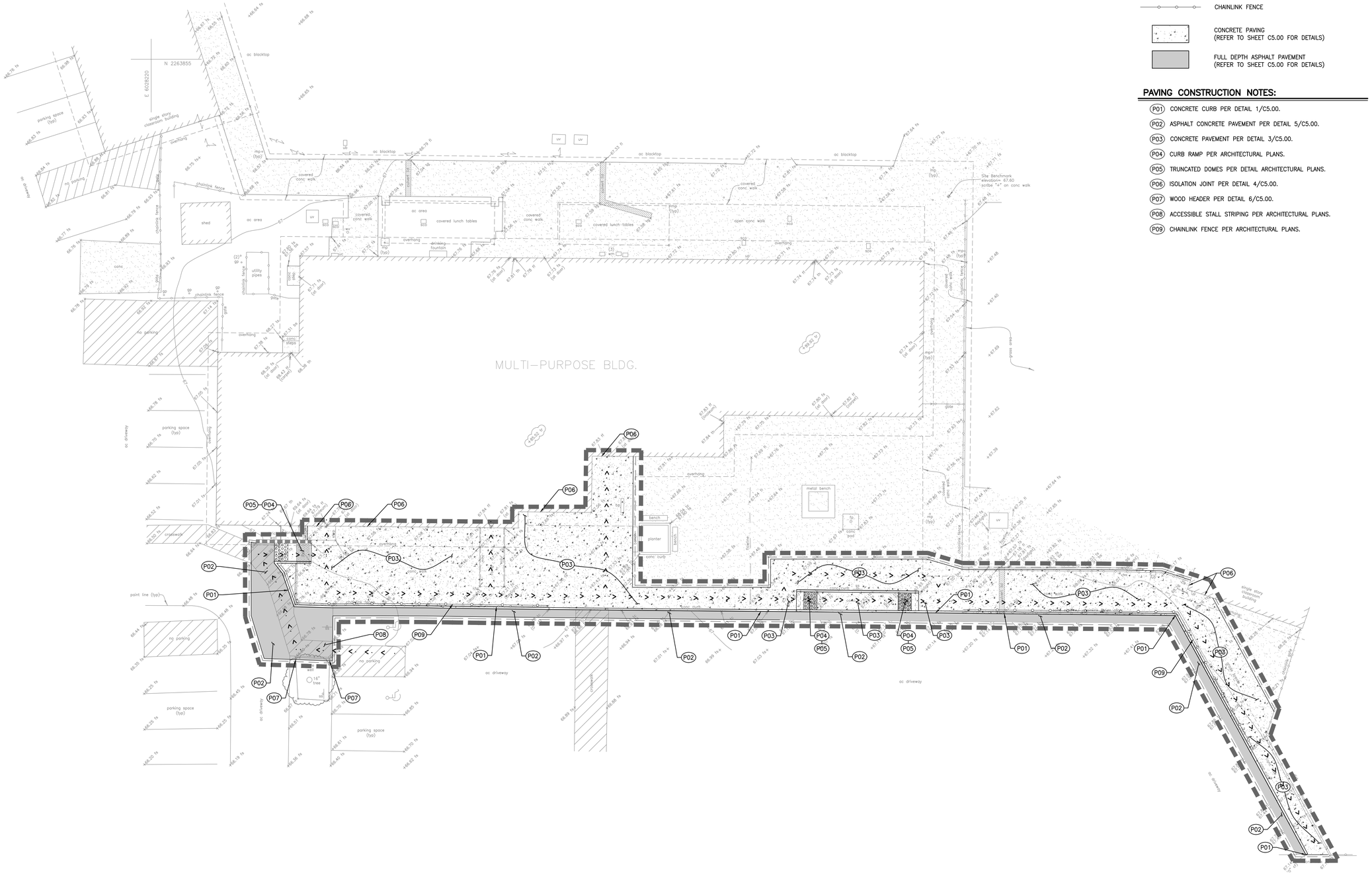
BUENA PARK, CA 90621

GRADING

Date	Project Number
03/04/2022	2100113
Scale	Drawing Number
AS NOTED	C1.30
Drawn: TN / Checked: JP	



LEGEND:

- LIMIT LINE OF GRADING
- SAWCUT
- ACCESSIBLE PATH OF TRAVEL
- CHAINLINK FENCE
- CONCRETE PAVING (REFER TO SHEET C5.00 FOR DETAILS)
- FULL DEPTH ASPHALT PAVEMENT (REFER TO SHEET C5.00 FOR DETAILS)

PAVING CONSTRUCTION NOTES:

- P01 CONCRETE CURB PER DETAIL 1/C5.00.
- P02 ASPHALT CONCRETE PAVEMENT PER DETAIL 5/C5.00.
- P03 CONCRETE PAVEMENT PER DETAIL 3/C5.00.
- P04 CURB RAMP PER ARCHITECTURAL PLANS.
- P05 TRUNCATED DOMES PER DETAIL ARCHITECTURAL PLANS.
- P06 ISOLATION JOINT PER DETAIL 4/C5.00.
- P07 WOOD HEADER PER DETAIL 6/C5.00.
- P08 ACCESSIBLE STALL STRIPING PER ARCHITECTURAL PLANS.
- P09 CHAINLINK FENCE PER ARCHITECTURAL PLANS.

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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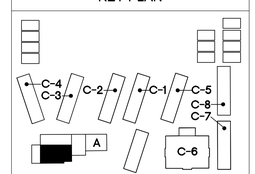

BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
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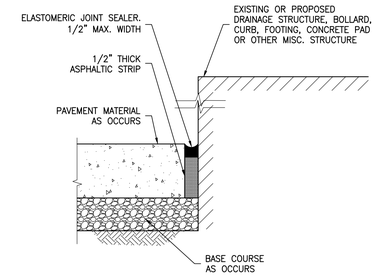
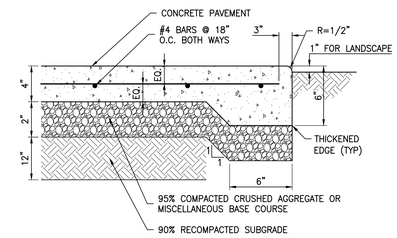
PAVING PLAN

Date :03/04/2022	Project Number 2100113
Scale AS NOTED	Drawing Number C1.40
Drawn TN / Checked JP	



4 ISOLATION JOINT AT STRUCTURE

N.T.S.

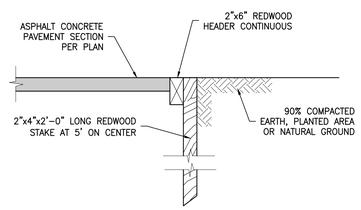


NOTES:

1. ALL TREAD SURFACES SHALL BE SLIP–RESISTANT.
2. REFER TO CIVIL SPECIFICATIONS FOR COLOR, PATTERN, TEXTURE, AND FINISH.
3. CONTRACTOR TO MATCH EXISTING SCORE PATTERN WHERE PROPOSED CONSTRUCTION JOINTS ARE NOT SHOWN PER PLAN. SEE DETAIL 2 HEREON.
4. CONCRETE MIX PER 560–C–3250 PER SSPWC 2018.

3 CONCRETE WALK SECTION

N.T.S.

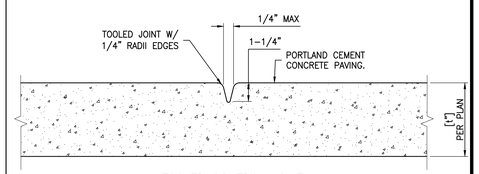


NOTE:

1. PRESSURE TREATED WOOD MAY BE SUBSTITUTED.

6 WOOD HEADER

N.T.S.



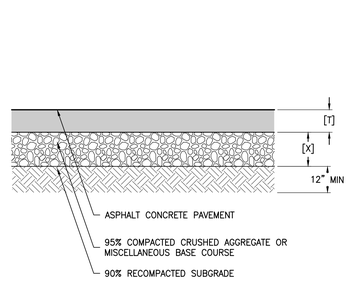
TOOLED CONTROL JOINT

NOTES:

1. CONTROL JOINTS SHALL BE CONSTRUCTED PER S.S.P.W.C.
2. CONSTRUCT CONTROL JOINTS WITHIN 24 HOURS OF POUR.
3. SEE PLAN FOR LOCATION OF CONTROL JOINTS.

2 TOOLED CONTROL JOINT

N.T.S.

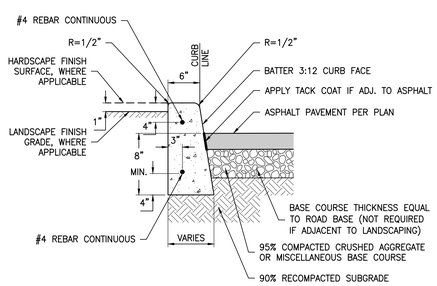


NOTE:

1. [T] = [MATCH EXISTING +1", OR 4"], WHICHEVER IS GREATER
2. [X] = [MATCH EXISTING]

5 ASPHALT PAVEMENT SECTION

N.T.S.



NOTES:

1. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.
2. CONTROL JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 10' INTERVALS O.C.
3. WHERE A WALK IS ADJACENT TO THE CURB, THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.
4. CONCRETE MIX PER 560–C–3250 PER SSPWC 2018.

1 CONCRETE CURB

N.T.S.

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ALI KHAMSI No. C74768 Exp. 12/31/21 CIVIL STATE OF CALIFORNIA

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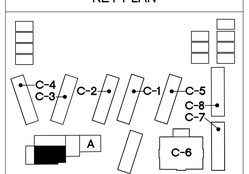
NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



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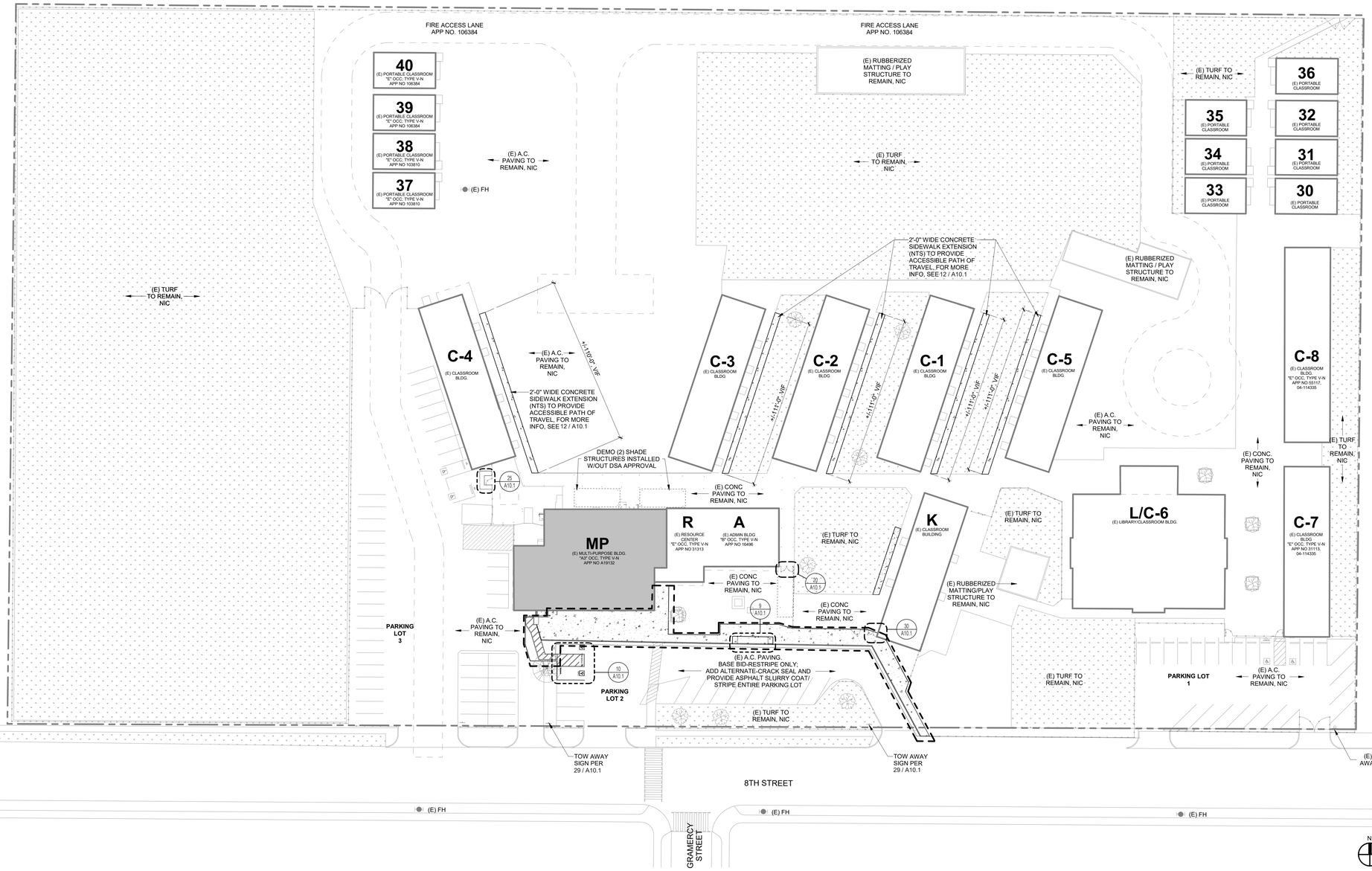
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

DETAILS

Date 03/04/2022	Project Number 2100113
Scale AS NOTED	Drawing Number C5.00
Drawn TN / Checked JP	



OVERALL SITE PLAN 1" = 30'-0" 4

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR 6'-0" HIGH TEMPORARY CONSTRUCTION BARRIER WITH VISION SCREEN AT STAGING, STORAGE AND CONSTRUCTION AREA WITH SIGNAGE EVERY 20'-0" TO WARN STUDENTS OF CONSTRUCTION AREA.
2. CONTRACTOR TO BRING IN OFFICE TRAILER TO CONSTRUCTION AREA.
3. CONTRACTOR SHALL ACCESS THE SITE FROM HOLDER STREET. ANY DAMAGE TO FIRE LANE WILL BE AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR TO REPAIR BACK TO EXISTING CONDITIONS ALL LAYDOWN AREAS AT THE END OF CONSTRUCTION. THIS INCLUDES LANDSCAPE AREAS AND ANY BROKEN SPRINKLERS, VALVE BOXES, CONCRETE, ASPHALT, ETC.
5. CONTRACTOR SHALL REPLACE, RECONSTRUCT AND REPAIR ALL EXISTING WORK THAT IS IMPACTED, DAMAGED, OR DESTROYED AS A RESULT OF ANY CONTRACTOR WORK INCLUDING, BUT NOT LIMITED TO, HARDSCAPING, SIDEWALKS, IRRIGATION SYSTEMS, LANDSCAPING, LAWNS, STRUCTURES AND UTILITIES - ALL TO THE SATISFACTION OF THE DISTRICT.
6. WHERE ASPHALT OR CONCRETE IS BEING REPATCHED, CONTRACTOR SHALL PROVIDE EVEN AND STRAIGHT LINE CUTS WITH 2-FOOT STRAIGHT SLURRY SEAL SURFACE PATCH ON BOTH SIDES OF CUT.
7. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON SITE TO AVOID EXISTING DUCTS, PIPING OR CONDUITS, ETC., AND TO PREVENT HAZARDS TO PERSONNEL AND/OR DAMAGE TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN AND INSTALLED BY ANY OTHER CONTRACTS. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY ELEMENTS FOR CONSTRUCTION SAFETY.
8. GATES IN PATH OF TRAVEL SHALL COMPLY WITH EXIT DOOR REQUIREMENTS WITH PROPER LEVER HARDWARE AND KICK PLATES.

LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- (E) FIRE HYDRANT
- (E) BUILDING, NOT UNDER SCOPE OF WORK
- BUILDING UNDER SCOPE OF WORK
- CONCRETE SIDEWALK EXTENSION PER 12 / A10.1

NOTE:
SCOPE INDICATED IS CORRECTIVE WORK AS REQ'D TO PROVIDE AN ACCESSBLE PATH OF TRAVEL FOR DSA APP NO 04-114335

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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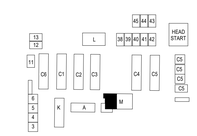
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
DSA SUBMITTAL	12/15/2021
DSA BACK CHECK	03/04/2022
BIDDING	
CONSTRUCTION	

KEY PLAN



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DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
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OVERALL SITE PLAN

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A1.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:25:53 PM
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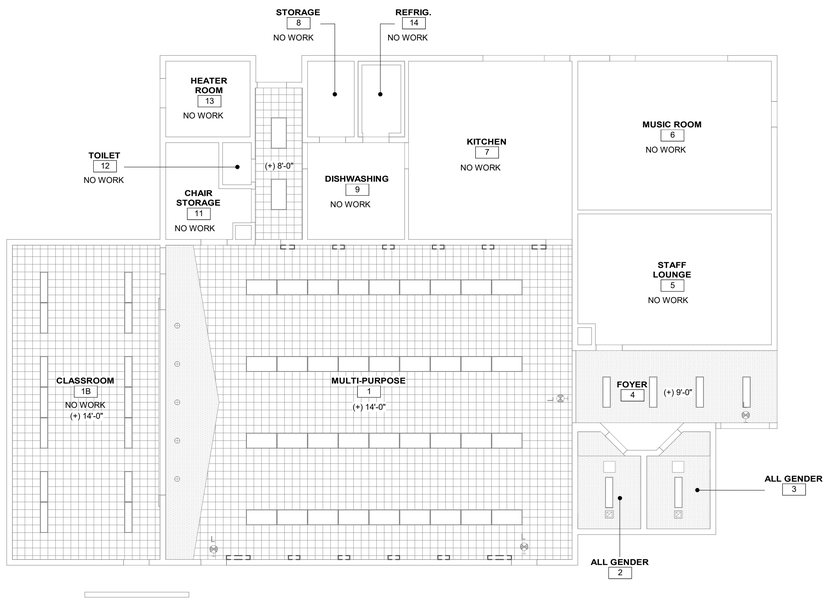
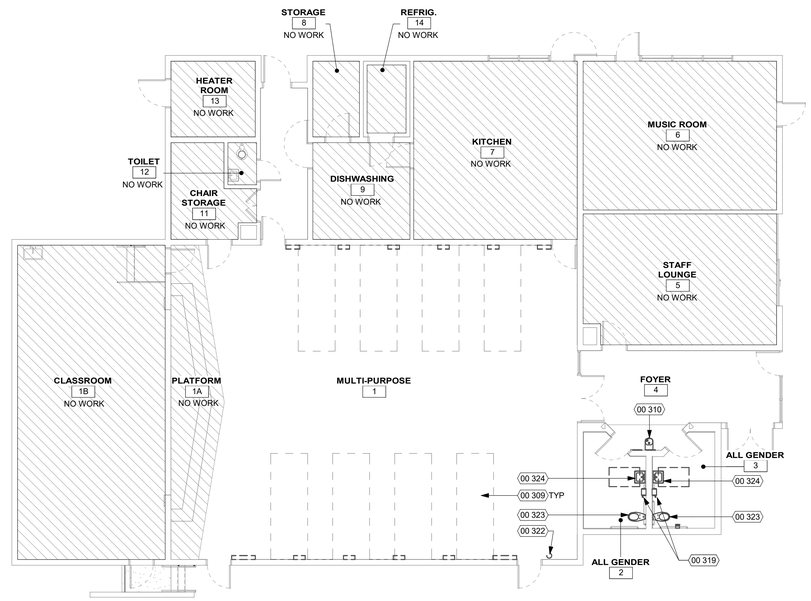
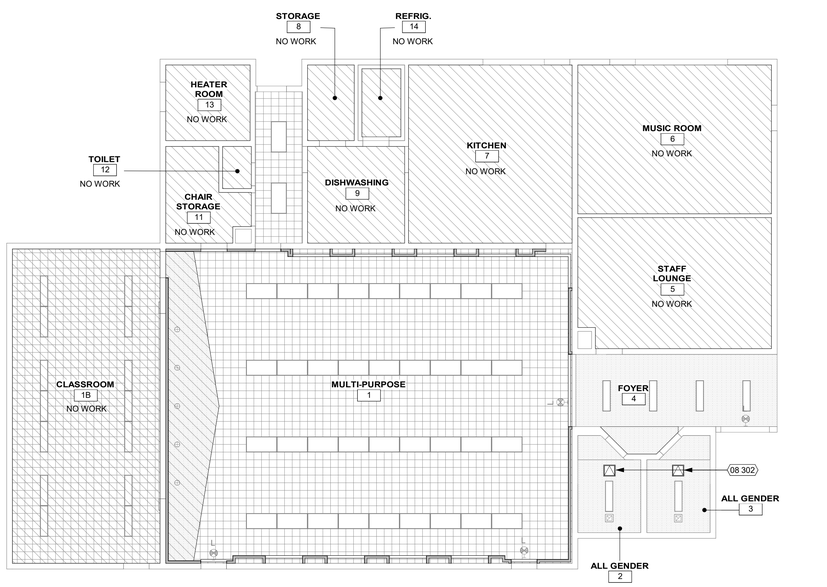


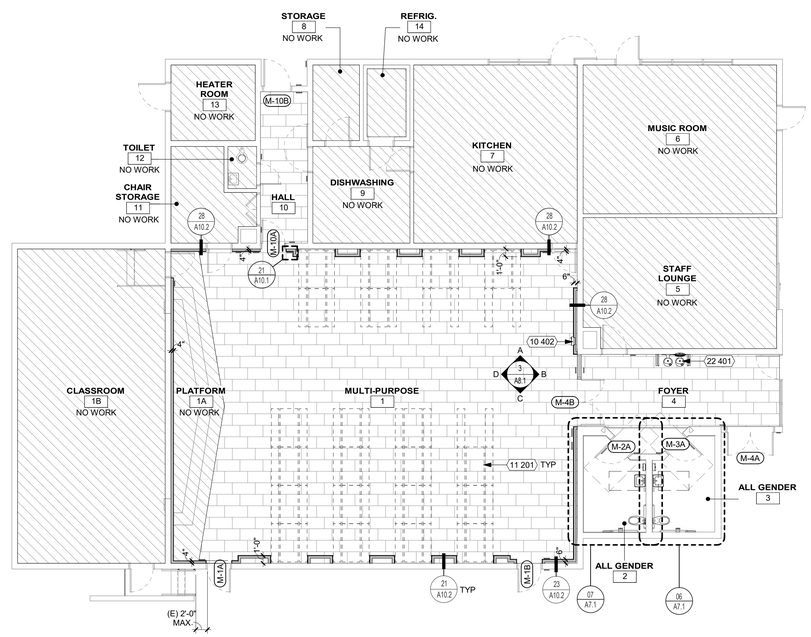
DEMOLITON REFLECTED CEILING PLAN 1/8" = 1'-0" 18



DEMOLITION FLOOR PLAN 1/8" = 1'-0" 8



ALTERATION REFLECTED CEILING PLAN 1/8" = 1'-0" 20



ALTERATION FLOOR PLAN 1/8" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
00 309	REMOVE (E) IN-WALL CAFETERIA TABLE/POCKET/POCKET FRAMING
00 310	REMOVE (E) DRINKING FOUNTAIN AND TILE WAINSCOT
00 319	REMOVE (E) PAPER TOWEL DISPENSER, SAVE FOR RE-USE
00 322	REMOVE (E) BRACKET-MOUNTED FIRE EXTINGUISHER
00 323	REMOVE (E) WATER CLOSET
00 324	REMOVE (E) LAVATORY
08 302	CEILING ACCESS PANEL PER 29/A10.2
10 402	FIRE EXTINGUISHER IN SEMI-RECESSED CABINET PER 5/A10.2
11 201	DOUBLE-STACKED IN-WALL CAFETERIA TABLE/POCKET IN WOOD POCKET FRAMING (SEE DETAIL 21/A10.2)
22 401	HI-LO DRINKING FOUNTAIN/BOTTLE FILLER PER 25/A10.2

DEMOLITION FLOOR PLAN LEGEND

BUILDING ELEMENT TO BE DEMOLISHED, REMOVED, AND/OR RELOCATED

NOTE: NO DEMOLITION SHALL BEGIN UNTIL PLANS HAVE BEEN APPROVED BY DSA

(E) TO REMAIN

RCP GENERAL NOTES

1. PAINT GYP. BD. CEILINGS AND SOFFITS P-1 UNO
2. PAINT EXPOSED CEILINGS, DUCTWORK AND EQUIPMENT PER FINISH LIST

FINISH LIST

LUXURY VINYL TILE			
LVT-1	MOHAWK GROUP	LIVING LOCAL 12" X 24" "WEATHERING" - 960	
LVT-2	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "SPORTY BLUE" - 620	
LVT-3	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "MASCALI" - 585	
WALL BASE			
B-1	JOHNSONITE	4" COVED, COLOR: 23 "VAPOR GREY" CG	
VINYL WALLCOVERING TACKBOARD W/ VINYL FABRIC-WRAPPED EDGES @ INTERIOR SEAMS AND VINYL PERIMETER TRIM			
VWC-1	ALL	KOROSEAL	SPELLBOUND "DELTA" 8821-71
PAINT			
P-1	TYP WALLS, CEILINGS, SOFFITS, INT. DOORS/DOOR FRAMES	VISTA PAINT	"COOL ELEGANCE" 0517 (SEMI GLOSS DOORS/FRAMES & EGGSHELL FIELD)
P-2	ACCENT COLOR AS INDICATED	VISTA PAINT	"CARIBBEAN CURRENT" 0598 (SEMI GLOSS DOORS/ FRAMES & EGGSHELL FIELD)
P-3	TABLE POCKETS	RAL	K1 CLASSIC "DISTANT BLUE" 5023
PLASTIC LAMINATE			
PLAM-1	FOLDING LUNCH TABLES/BENCHES	WILSONART	"WHITE TIGRIS" 4783-60
FRP			
FRP-1	HALLWAY WALLS, TYP	MARLITE	SMOOTH S 100 S/2/S WHITE W/ WHITE PVC TRIM

RCP LEGEND

(E) 12" x 12" ACOUSTIC CEILING TILES TO REMAIN, PAINT P-1, UNO

PATCH/REPAIR (E) GYP BD CEILING AS REQ'D, PAINT P-1

PATCH/REPAIR (E) EXT CEMENT PLASTER CEILING AS REQ'D, PAINT TO MATCH (E) ADJ

(E) LIGHT FIXTURES TO REMAIN, CLEAN LENS/RELAMP TO MATCH (E)

EXISTING MECHANICAL EQUIPMENT TO REMAIN, CLEAN GRILLES/PAINT P-1

(E) CEILING ACCESS PANEL TO REMAIN

ROOM NAME A119 — ROOM TAG

(E) ILLUMINATED EXIT SIGN TO REMAIN

SELF-ILLUMINATED EXIT SIGN

GENERAL NOTES

1. FOR ALL REQUIRED SIGNAGE INCLUDING ROOM NAME/NUMBER, SEE SHEET A0.5
2. DIMENSIONS OF WALLS ARE FROM FACE OF STUD UNLESS OTHERWISE NOTED.
3. PAINT ALL INTERIOR WALLS P-1 UNO, SEE FINISH LIST FOR MORE INFO.
4. SEE STRUCTURAL DRAWINGS FOR MORE INFO.

FLOOR PLAN LEGEND

A101A — DOOR NUMBER, SEE DOOR SCHEDULE

A — WINDOW OR STOREFRONT PER WINDOW SCHEDULE

LINE OF ROOF, SKYLIGHT, OR SOFFIT OVERHEAD - SHOWN DASHED

(E) 1 HOUR OCCUPANCY SEPARATION

5/8" TYPE 'X' GYP BD ON WOOD STUD FURRING PER 4/S1.1, RELOCATE (E) DEVICES TO NEW FINISH SURFACE; PAINT P-1 UNO WHERE TACKBOARD NOT INSTALLED

(E) CMU WALL TO REMAIN, PROTECT IN PLACE

(E) WALL TO REMAIN, PROTECT IN PLACE

NOT IN CONTRACT

LVT PER FINISH LIST THIS SHEET

INTERIOR ELEVATION REFERENCE

X	=	INTERIOR ELEVATION NUMBER
AX.X	=	SHEET NUMBER
A/B/C/D	=	INTERIOR ELEVATION VIEW DESIGNATION

ACCESSIBLE DOOR CLEARANCES PER 1 / A10.1

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum Center Drive, Suite 1640
Irvine, California 92618
[T] 949.774.2920
www.StudioW-Architects.com

ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE C-30345 EXP. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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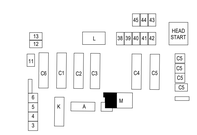
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

DEMOLITION/ ALTERATION FLOOR PLANS/RCPS

Date 03/04/2022	Project Number 21029
Application Number 04-120688	Drawing Number A2.1
Drawn Author	Checked Checker

PRINT DATE: 3/5/2022 3:25:55 PM
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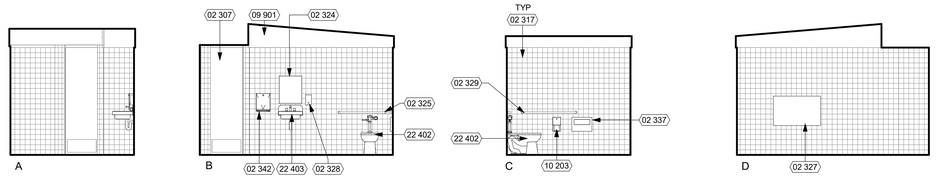
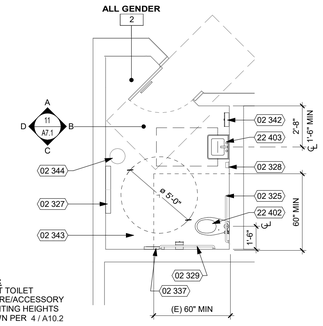


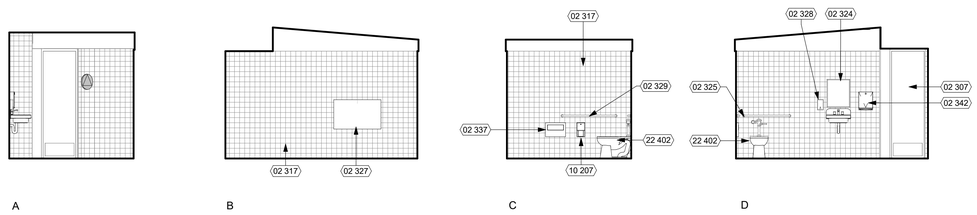
NOTE:
ADULT TOILET
FIXTURE/ACCESSORY
MOUNTING HEIGHTS
SHOWN PER 4 / A10.2

INTERIOR ELEVATION - ALL GENDER RR 2 1/4" = 1'-0" 11



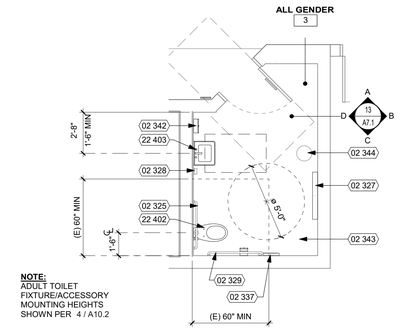
NOTE:
ADULT TOILET
FIXTURE/ACCESSORY
MOUNTING HEIGHTS
SHOWN PER 4 / A10.2

ENL'D ALTERATION FLOOR PLAN-ALL GENDER 2 1/4" = 1'-0" 06



NOTE:
ADULT TOILET
FIXTURE/ACCESSORY
MOUNTING HEIGHTS
SHOWN PER 4 / A10.2

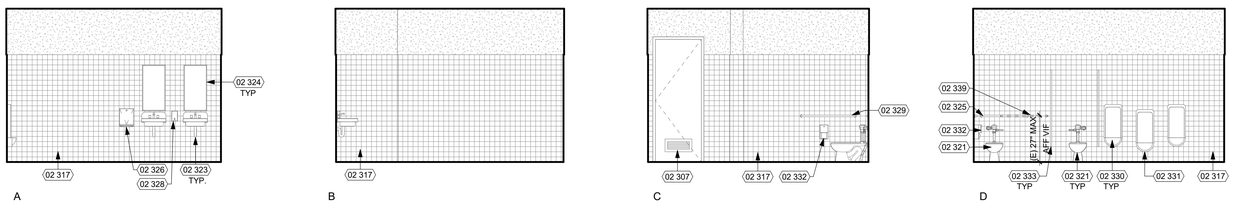
INTERIOR ELEVATION - ALL GENDER RR 3 1/4" = 1'-0" 13



NOTE:
ADULT TOILET
FIXTURE/ACCESSORY
MOUNTING HEIGHTS
SHOWN PER 4 / A10.2

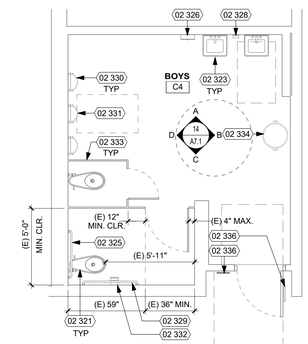
REF: 10 / A2.1

RESTROOM ENL'D ALTERATION FLOOR PLAN-ALL GENDER 3 1/4" = 1'-0" 07



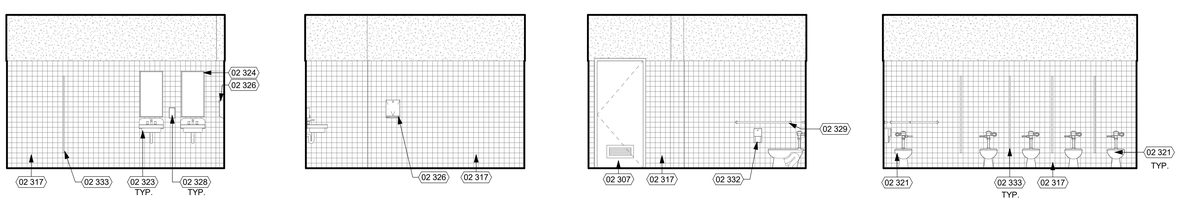
NOTE:
AGES: 9-12
TOILET FIXTURE/ACCESSORY
MOUNTING HEIGHTS SHOWN
PER 4 / A10.2

INTERIOR ELEVATIONS - (E) BOYS' RESTROOM C4 1/4" = 1'-0" 14



NOTE:
AGES: 9-12
TOILET FIXTURE/ACCESSORY
MOUNTING HEIGHTS SHOWN
PER 4 / A10.2

ENL'D (E) FLOOR PLAN - BOYS RESTROOM C4 1/4" = 1'-0" 09



NOTE:
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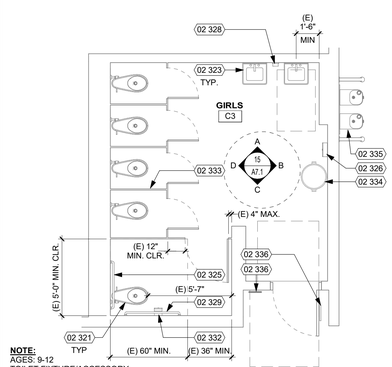
MOUNTING HEIGHTS SHOWN
PER 4 / A10.2

INTERIOR ELEVATIONS - (E) GIRLS' RESTROOM C3 1/4" = 1'-0" 15



NOTE:
AGES: 9-12
TOILET FIXTURE/ACCESSORY
MOUNTING HEIGHTS SHOWN
PER 4 / A10.2

ENL'D (E) FLOOR PLAN - GIRLS RESTROOM C3 1/4" = 1'-0" 10

KEYNOTES

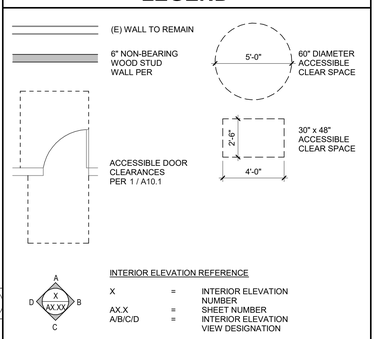
NUMBER	NOTE
02 307	(E) DOOR TO REMAIN, PROTECT IN PLACE
02 317	(E) CERAMIC TILE TO REMAIN
02 321	(E) FLOOR MOUNTED WATER CLOSET TO REMAIN
02 323	(E) LAVATORY TO REMAIN
02 324	(E) MIRROR TO REMAIN
02 325	(E) 36" STAINLESS STEEL GRAB BAR WITH SNAP FLANGE BOBRICK B-5806 TO REMAIN
02 326	(E) SURFACE MOUNTED PAPER TOWEL DISPENSER TO REMAIN
02 327	(E) BABY CHANGING STATION TO REMAIN
02 328	(E) SURFACE-MOUNTED SOAP DISPENSER BOBRICK B-2111 TO REMAIN
02 329	(E) 42" STAINLESS STEEL GRAB BAR WITH SNAP FLANGE BOBRICK B-5806 TO REMAIN
02 330	(E) URINAL TO REMAIN
02 331	(E) ACCESSIBLE URINAL TO REMAIN
02 332	(E) RECESSED MULTI-ROLL TOILET TISSUE DISPENSER BOBRICK B-3888 TO REMAIN
02 333	(E) TOILET PARTITION TO REMAIN
02 334	(E) FREESTANDING TRASH RECEPTACLE TO REMAIN
02 335	(E) DRINKING FOUNTAIN TO REMAIN
02 336	(E) SIGNAGE TO REMAIN
02 337	(E) SURFACE-MOUNTED SEAT-COVER DISPENSER BOBRICK B-221 TO REMAIN
02 339	GRAB BAR MAY BE SHIFTED TO OPEN SIDE OF STALL ADJACENT TO THE FLUSH VALVE IF THERE IS AN INABILITY TO PROVIDE A 1-1/2" MINIMUM CLEARANCE BETWEEN THE FLUSH VALVE & GRAB BAR. PATCH/REPAIR AS REQ'D. MATCH (E) ADJACENT TILE/GROUT.
02 342	RELOCATE (E) PAPER TOWEL DISPENSER OUT OF ACCESSIBLE WATER CLOSET CLEAR SPACE
02 343	PATCH/REPAIR (E) CERAMIC TILE AS REQ'D TO MATCH (E)
02 344	(E) FREESTANDING TRASH RECEPTACLE TO REMAIN (LOCATED OUTSIDE OF ACCESSIBLE CLEAR SPACE)
09 901	PAINT P-1 PER FINISH LIST
10 203	SURFACE MTD TOILET PAPER DISPENSER
10 207	TOILET PAPER DISPENSER, SURFACE MOUNTED
22 402	ACCESSIBLE FLOOR MOUNTED WATER CLOSET PER PLUMBING DRAWINGS
22 403	LAVATORY PER PLUMBING DRAWINGS

RESTROOM GENERAL NOTES

GENERAL
1. DIMENSIONS
   A. ALL MINIMUM CLEARANCE DIMENSIONS FOR PLUMBING FIXTURES ARE FROM FACE OF WALL FINISH TO CENTER OF FIXTURE, U.O.N.
   B. ALL DIMENSIONS MARKED "MIN. CLR" OR "CLR." ARE TO/ FROM FACE OF WALL FINISH (F.O.F.)
2. SEE FLOOR PLAN FOR INTERIOR FINISHES.

ACCESSORIES
1. FOR TYPICAL RESTROOM ACCESSORY MOUNTING HEIGHTS, ACCESSIBLE DIMENSIONS, SEE SHEET A10.10.2
2. TOILET ACCESSORIES LOCATED ON OR WITHIN WALLS SHALL BE INSTALLED AND SEALED TO PROTECT STRUCTURAL ELEMENTS FROM MOISTURE (CBC SECTION 1210.2.2)

LEGEND



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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum Center Drive, Suite 1640
Irvine, California 92618
[T] 949.774.2920
www.StudioW-Architects.com

ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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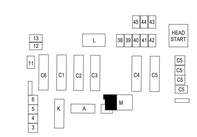
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS

Date 03/04/2022	Project Number 21029
Application Number 04-120688	Drawing Number A7.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:26:03 PM
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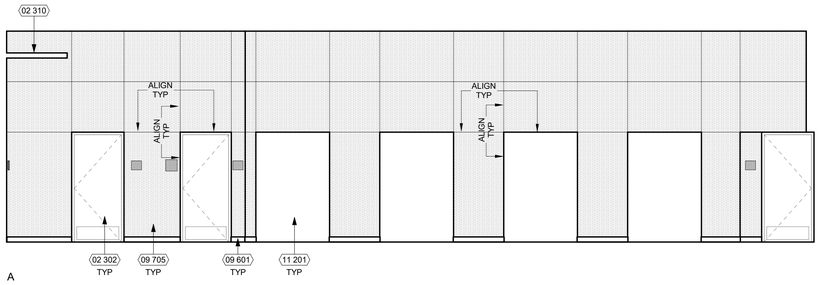

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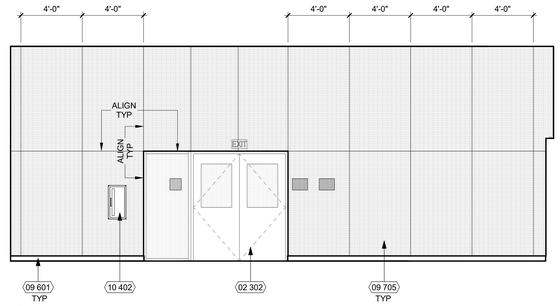

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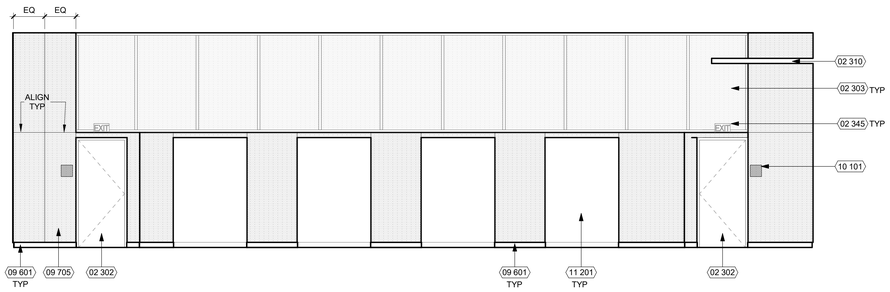

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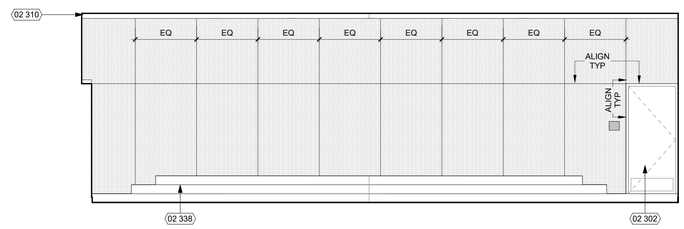
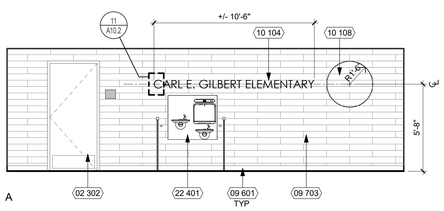


D

KEYNOTES

NUMBER	NOTE
02 302	(E) DOOR TO REMAIN. PAINT INTERIOR SURFACE P-1
02 303	(E) WINDOW TO REMAIN. PROTECT IN PLACE
02 310	(E) GYP. BD SOFFIT TO REMAIN; PAINT P-1
02 338	(E) PLATFORM STEPS TO REMAIN
02 340	(E) GYP. BD TO REMAIN, PATCH/REPAIR AS REQ'D; PAINT P-1
02 345	(E) ILLUMINATED EXIT SIGN TO REMAIN
09 601	4" RUBBER WALL BASE PER FINISH LIST
09 701	8'-0" TALL FRP WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
09 703	STIKWOOD ADHERED WOOD PANELING PER FINISH LIST
09 705	VINYL WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.5
10 104	6" TALL CAST ALUMINUM PIN MOUNTED LETTERS
10 108	POWDER COATED LASER CUT GILBERT LOGO W/ CONCEALED FASTENERS
10 402	FIRE EXTINGUISHER IN SEMI-RECESSED CABINET PER 5/A10.2
11 201	DOUBLE-STACKED IN-WALL CAFETERIA TABLE/POCKET IN WOOD POCKET FRAMING (SEE DETAIL 21/A10.2)
22 401	HI-LO DRINKING FOUNTAIN/BOTTLE FILLER PER 25/A10.2

INTERIOR ELEVATIONS - MULTI-PURPOSE ROOM 1/4" = 1'-0" 09



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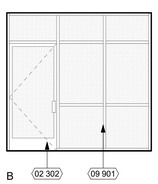

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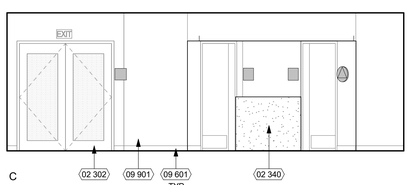

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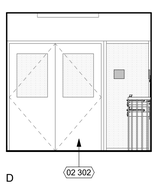

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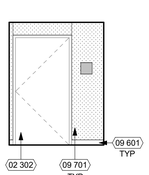
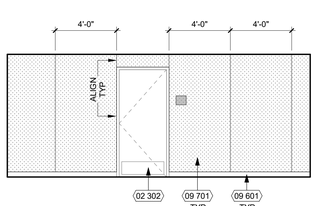
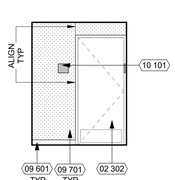
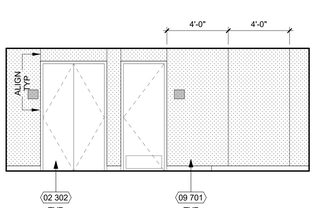
INTERIOR ELEVATIONS - FOYER 1/4" = 1'-0" 12









INTERIOR ELEVATION - HALL 10 - D 1/4" = 1'-0" 10

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

STUDIO W ARCHITECTS

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400 Spectrum Center Drive, Suite 1640
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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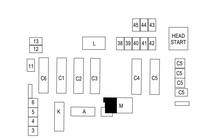
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

INTERIOR ELEVATIONS

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A8.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:26:06 PM
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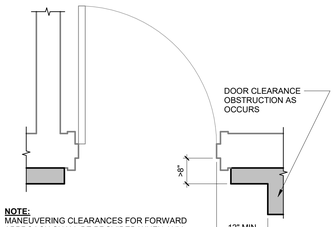


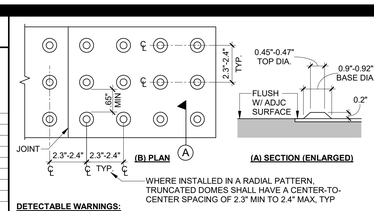
NOTE:
MANEUVERING CLEARANCES FOR FORWARD APPROACH SHALL BE PROVIDED WHEN ANY OBSTRUCTION WITHIN 18" OF THE LATCH SIDE OF AN INTERIOR DOORWAY, OR WITHIN 24" OF THE LATCH SIDE OF AN EXTERIOR DOORWAY, PROJECTS MORE THAN 8" BEYOND THE FACE OF THE DOOR, MEASURED PERPINDICULAR TO THE FACE OF THE DOOR/GATE PER 11B-404.2.4.3.

REF: 10 / A2.1

DOOR CLEARANCES @ OBSTRUCTIONS 3/4" = 1'-0" 21

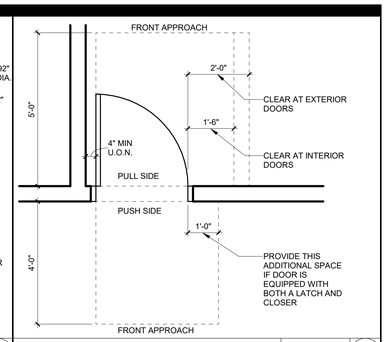
DOOR SCHEDULE

MARK	DOOR SIZE PAIR	DOOR SIZE PANEL WIDTH	DOOR SIZE HT	DOOR SIZE THK	DOOR TYPE	DOOR MAT.	DOOR FINISH	DOOR CORE	DOOR GLASS	DOOR RATING	DOOR LOUVER HT	DOOR LOUVER WD	HDW GROUP	HDW PANIC	HDW CLOSER	FRAME TYPE	FRAME MTL.	FRAME FINISH	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS THRESHOLD	FRAME DETAILS OTHER	COMMENTS
M-1A		3'-0"	7'-0"	1 3/4"	B	(E) HM								PH			(E) HM		(E)	(E)	(E)		
M-1B		3'-0"	7'-0"	1 3/4"	B	(E) HM								PH			(E) HM		(E)	(E)	(E)		
M-2A		3'-0"	7'-0"	1 3/4"	B	(E) HM											(E) HM		(E)	(E)	(E)		
M-3A		3'-0"	7'-0"	1 3/4"	B	(E) HM											(E) HM		(E)	(E)	(E)		
M-4A		3'-0"	7'-0"	1 3/4"	A	(E) HM								PH			(E) HM		(E)	(E)	(E)		
M-4B		3'-0"	7'-0"	1 3/4"	B	(E) HM								PH			(E) HM		(E)	(E)	(E)		
M-10A		3'-0"	7'-0"	1 3/4"	B	(E) SC											(E) HM		(E)	(E)	(E)		
M-10B		3'-6"	7'-0"	1 3/4"	C	(E) HM											(E) HM		(E)	(E)	(E)		

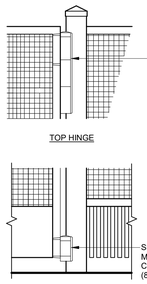


DETECTABLE WARNINGS:
1. **HAZARDOUS VEHICULAR AREAS** DETECTABLE WARNINGS AT HAZARDOUS VEHICULAR AREAS SHALL BE 36 INCHES IN WIDTH.
2. **ONLY APPROVED DSA-AC DETECTABLE WARNING PRODUCTS** AND DIRECTIONAL SURFACES SHALL BE INSTALLED PER THE CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 1, CH 5, ARTICLES 2,3, & 4. REFER TO CCR TITLE 24, PART 12, SEC 12 - 11B.705 FOR BLDG/FACILITY ACCESS SPEC'S FOR PRODUCT APPROVAL FOR DETECTABLE WARNING PRODUCTS/DIRECTIONAL SURFACES.
3. **COLOR AND CONTRAST** THE MAT'L USED TO PROVIDE VISUAL CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. WARNING SURFACES SHALL BE YELLOW AND APPROX. FS 33538 OF FEDERAL STD 595C OR SHALL PROVIDE A 70% MIN VISUAL CONTRAST W/ ADJ. WALKING SURFACES. (HAZARDOUS VEHICULAR AREAS SHALL ONLY ALLOW YELLOW, LISTED ABOVE)

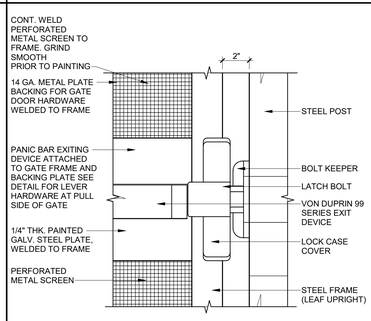
TRUNCATED DOMES 1/4" = 1'-0" 6



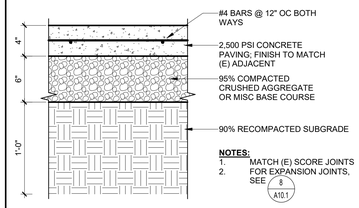
TYPICAL DOOR CLEARANCES 1/2" = 1'-0" 1



HEAVY DUTY HINGES 1" = 1'-0" 22

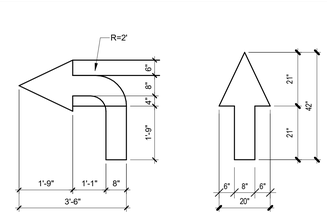


GATE PANIC HARDWARE 3/4" = 1'-0" 17



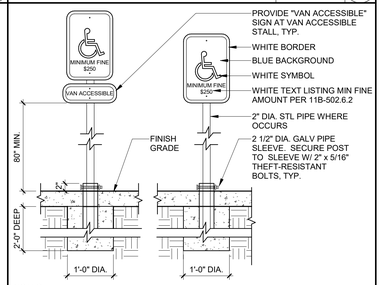
NOTES:
1. MATCH (E) SCORE JOINTS
2. FOR EXPANSION JOINTS, SEE 8 / A10.1

CONCRETE SIDEWALK EXTENSION 1 1/2" = 1'-0" 12



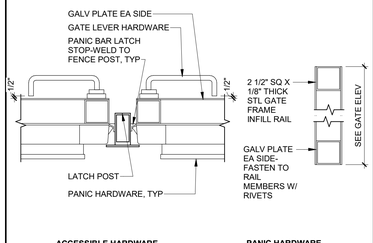
NOTES:
1. ALL FLOW ARROWS TO BE 2 COATS WHITE BEADED REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.
2. REVERSE ARROWS FOR OPPOSITEI DIRECTION OF FLOW

DIRECTIONAL ARROWS 1/2" = 1'-0" 7

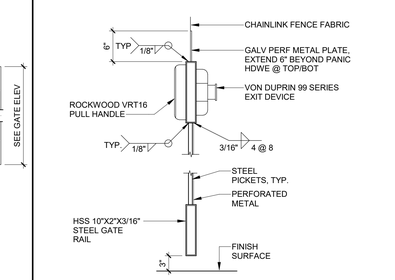


NOTES:
1. ACCESSIBLE SIGN TO BE LOCATED ON FACE OF COLUMN U.O.N.
2. ALL TEXT TO BE 2" IN HEIGHT WHEN MOUNTED ABOVE 70", PER 11B-703.5.5
3. MINIMUM SIGN SIZE TO BE 70 SQ INCHES, MIN.

ACCESSIBLE PARKING STALL SIGNS 3/4" = 1'-0" 2

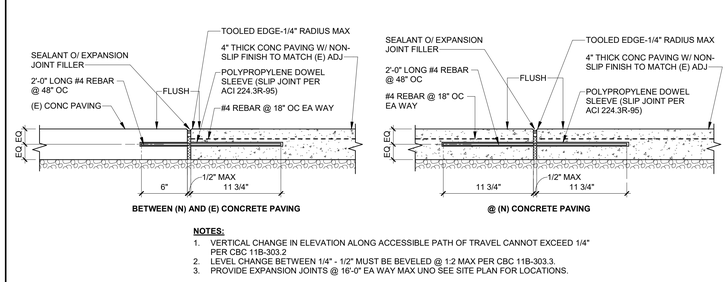


CHAIN LINK GATE HARDWARE 1" = 1'-0" 23



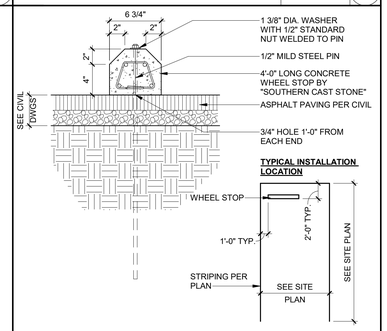
REF: 19 / A10.1

GATE PANIC HARDWARE SECTION 1" = 1'-0" 18

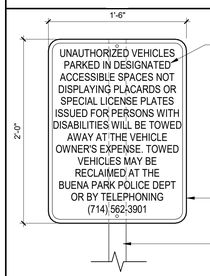


NOTES:
1. VERTICAL CHANGE IN ELEVATION ALONG ACCESSIBLE PATH OF TRAVEL CANNOT EXCEED 1/4" PER CBC 11B-303.2
2. LEVEL CHANGE BETWEEN 1/4" - 1/2" MUST BE BEVELED @ 1:2 MAX PER CBC 11B-303.3.
3. PROVIDE EXPANSION JOINTS @ 16'-0" EA WAY MAX UNO SEE SITE PLAN FOR LOCATIONS.

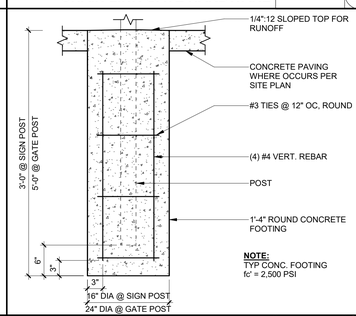
CONCRETE PAVING EXPANSION JOINTS 1 1/2" = 1'-0" 8



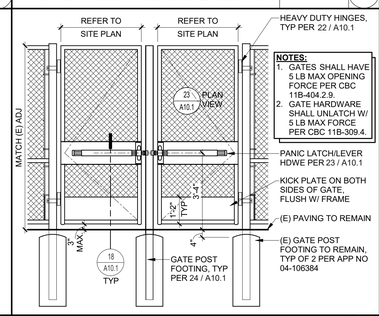
CONCRETE WHEELSTOP 1 1/2" = 1'-0" 3



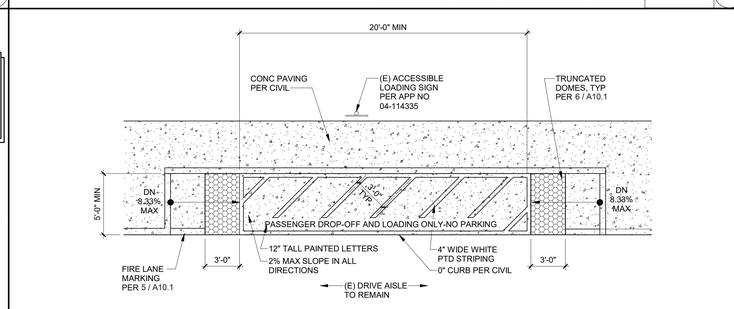
TOW AWAY SIGN 1 1/2" = 1'-0" 29



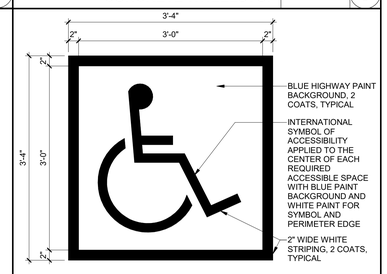
GATE POST FOOTING 1" = 1'-0" 24



CHAINLINK GATE ELEVATION 3/8" = 1'-0" 19

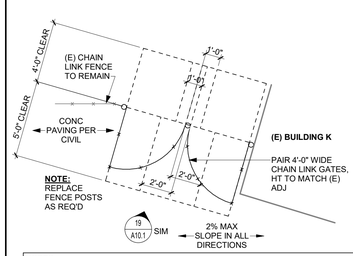


ACCESSIBLE DROP-OFF 3/16" = 1'-0" 9



ISA SYMBOL SHALL COMPLY WITH 11B-502.6 AND 11B-703.7.2.1

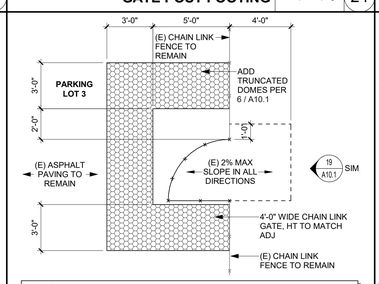
ISA PARKING STALL STRIPING 1" = 1'-0" 4



NOTE:
REPLACE FENCE POSTS AS REQ'D

NOTES:
1. GATES SHALL HAVE AN OPENING FORCE OF 5 LBS MAX PER CBC 11B-404.2.9
2. GATE HARDWARE SHALL UNLATCH WITH 5 LBS MAX FORCE PER CBC 11B-309.4.
3. REPLACE FENCE POSTS AS REQ'D.

ENLNARGED GATE PLAN 1/4" = 1'-0" 30



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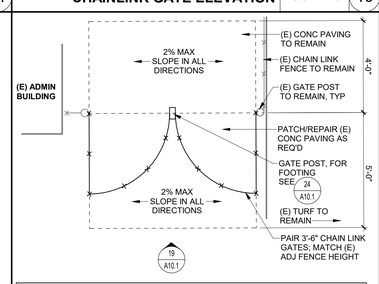
3. REPLACE FENCE POSTS AS REQ'D.

ENLNARGED GATE PLAN 1/4" = 1'-0" 25



NOTES:
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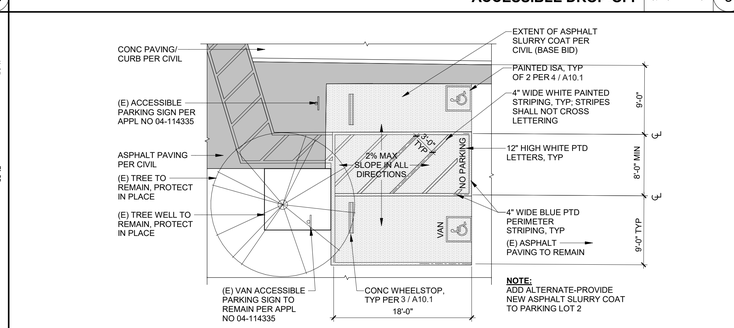
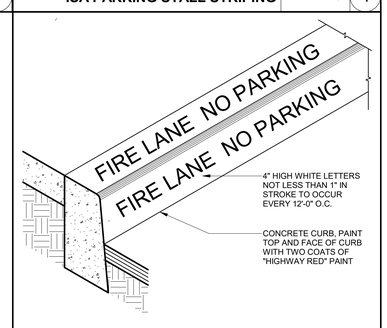
2. GATE HARDWARE SHALL UNLATCH WITH 5 LBS MAX FORCE PER CBC 11B-309.4.
3. REPLACE FENCE POSTS AS REQ'D.

ENLARGED GATE PLAN 3/8" = 1'-0" 20



ENLARGED SITE PLAN-ACCESSIBLE PARKING 1/8" = 1'-0" 10



FIRE LANE MARKING 1 1/2" = 1'-0" 5

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APP: 04-120688 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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○ BIDDING	
○ CONSTRUCTION	

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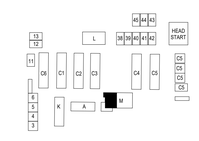

BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
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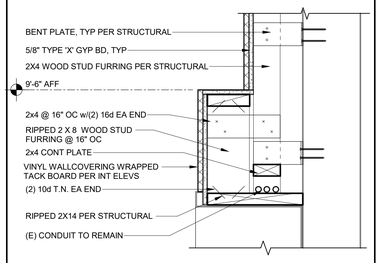
BUENA PARK, CA 90621

DOOR SCHEDULE/DETAILS

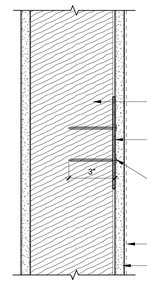
Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A10.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/5/2022 3:26:11 PM
FILE PATH: C:\Users\gillanc\Documents\21029 Buena Park USD-Gilbert MPR-A19_gillancAYE5V.rvt

NOTES:
1. POCKET TO ACCOMMODATE DBL STACKING TABLES, VERIFY HT/DEPTH W/ FOLDING TABLE MFR REQ'S
2. FOR MORE INFO, SEE 4/S1.1



LUNCH TABLE POCKET SECTION 1 1/2" = 1'-0" 21



NOTE: FLAT STRAP BACKING IS AN ALTERNATIVE FOR AREAS WHERE BLOCKING IS REQUIRED BY CASEWORK OR ACCESSORIES, BUT STANDARD WOOD BLOCKING IS NOT FEASIBLE DUE TO CONDUIT AND OTHER STUD BAY ITEMS.

WOOD STUD FRAMING PER PLAN

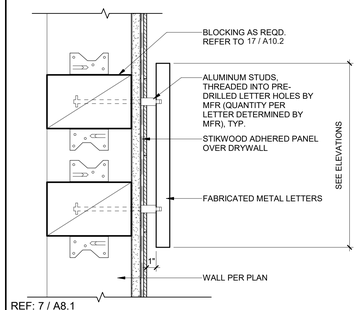
16. GA. X 6" FLAT STRAP BACKING, FULL LENGTH OF CASEWORK OR ACCESSORY

(2) #8 WOOD SCREWS WITH MIN. 3" EMBED INTO EVERY STUD FOR LENGTH OF CASEWORK OR ACCESSORY

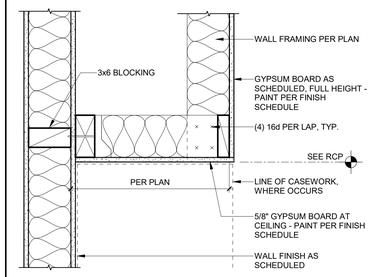
FINISH AS SCHEDULED

GYPSUM BOARD AS SCHEDULED

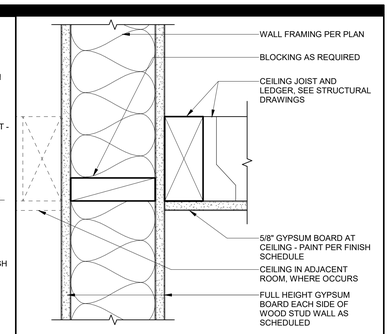
FLAT STRAP BACKING 3" = 1'-0" 16



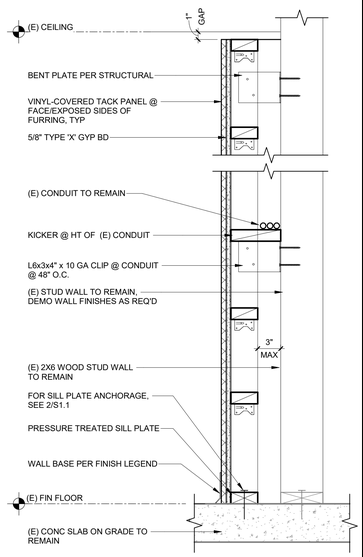
LETTER ATTACHMENT 3" = 1'-0" 11



GYPSUM BOARD SOFFIT 1 1/2" = 1'-0" 6

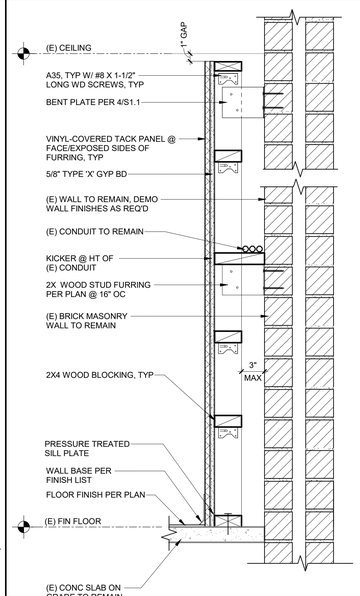


GYP BOARD CEILING 3" = 1'-0" 1



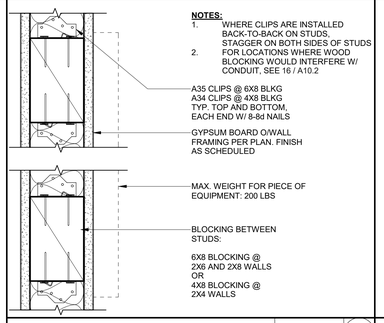
NOTES:
1. FOR MORE INFO, SEE 5/S1.1
2. FOR TABLE POCKET FRAMING, SEE 21 / A10.2

FURRING @ INTERIOR WALLS 1 1/2" = 1'-0" 28



NOTES:
1. FOR MORE INFO, SEE 2/S1.1
2. FOR TABLE POCKET FRAMING, SEE 21 / A10.2

WALL FURRING @ CMU 1 1/2" = 1'-0" 23



NOTES:
1. WHERE CLIPS ARE INSTALLED BACK-TO-BACK ON STUDS, STAGGER ON BOTH SIDES OF STUDS FOR LOCATIONS WHERE WOOD BLOCKING WOULD INTERFERE W/ CONDUIT, SEE 16 / A10.2
2.

A35 CLIPS @ 6X8 BLKG
A34 CLIPS @ 4X8 BLKG
TYP. TOP AND BOTTOM, EACH END W/ 8-8d NAILS

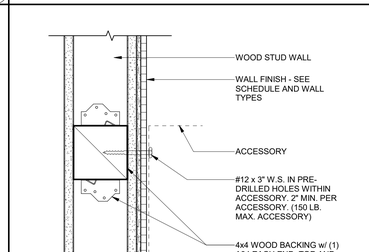
GYPSUM BOARD O/WALL FRAMING PER PLAN. FINISH AS SCHEDULED

MAX. WEIGHT FOR PIECE OF EQUIPMENT: 200 LBS

BLOCKING BETWEEN STUDS:

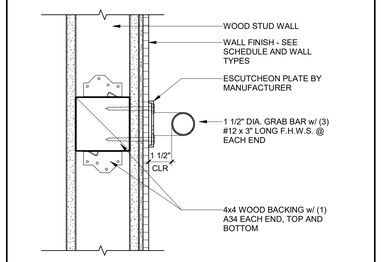
6X8 BLOCKING @ 2X6 AND 2X8 WALLS OR 4X8 BLOCKING @ 2X4 WALLS

TYPICAL BLOCKING 3" = 1'-0" 17



NOTES:
1. ALL DIMENSIONS MARKED " * " SEE 4 / A10.2
2. SEE TOILET FIXTURE/ACCESSORY SCHEDULE FOR MORE INFO
3. FOR TYPICAL ACCESSORY MOUNTING SEE DETAIL 13 / A10.2
4. FOR AGE GROUPS 9-12, ALL DIMENSIONS MARKED " ** " = 27" MAX. A.F.F., SEE 4 / A10.2 FOR OTHER AGE GROUPS.

PLUMBING FIXTURE AND RESTROOM ACCESSORY MOUNTING HEIGHTS 1/4" = 1'-0" 2



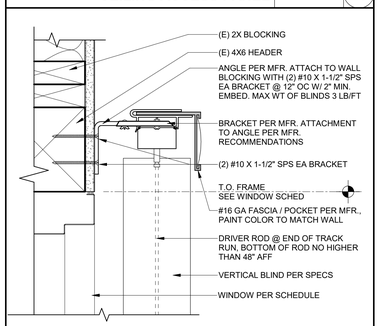
GRAB BAR ANCHORAGE 3" = 1'-0" 18

TYPICAL ACCESSORY MOUNTING 3" = 1'-0" 13

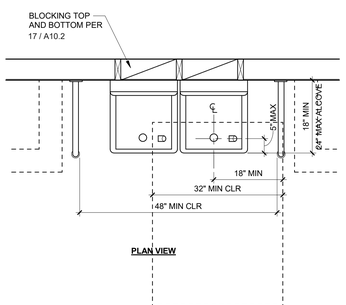
FIXTURE	DIMENSION REFERENCE	ADULT DIMENSION	PER TABLE 11B-604.9 (2019 CBC) SUGGESTED DIMENSIONS FOR CHILDREN		2019 CBC REFERENCES: T: TABLE S: SECTION F: FIGURE
			AGES 5-8	AGES 9-12	
GRAB BAR	TOP OF GRIPPING SURFACE	33" - 36"	20" - 25"	25" - 27"	T: 11B-604.9
TOILET PARTITION/ URINAL SCREEN	TOE CLEARANCE	9" MIN.	12" MIN.		
SOAP DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
ELECTRIC HAND DRYER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART	4" MAX PROJECTION FROM WALL, TYP		S: 11B-603.5
PAPER TOWEL DISPENSER/ WASTE RECEPTACLE	ABOVE FINISH FLOOR	40" MAX. TO TOP OF OPENING			S: 11B-603.5
SEAT COVER DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
MIRROR	BOTTOM EDGE OF REFLECTING SURFACE	40" MAX. ABOVE LAVATORY OR COUNTERTOP 35" MAX. NOT ABOVE LAVATORY OR COUNTERTOP			S: 11B-603.3
	BOTTOM EDGE OF REFLECTING SURFACE	20" MAX. IN DRESSING, FITTING, & LOCKER ROOMS			S: 11B-803.6
TOILET PAPER DISPENSER	OUTLET HEIGHT	19" MIN.	14" - 17"	17" - 19"	T: 11B-604.9 S: 11B-604.7
	FURTHEST IN FRONT OF WATER CLOSET	7" MIN. - 9" MAX. TO CENTERLINE OF DISPENSER			
SANITARY NAPKIN DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
SANITARY NAPKIN DISPOSAL	BETWEEN REAR WALL AND TOILET PAPER DISPENSER	19" MIN. A.F.F. TO BOTTOM OF OPENING	N/A		
COAT HOOK	ABOVE FINISH FLOOR - TOP OF HOOK	40" - 48"			S: 11B-604.8.3
HI-LO DRINKING FOUNTAIN	HIGH SPOUT HEIGHT	38" MIN. - 43" MAX.			S: 11B-602.7
	LOW SPOUT APPROACH, HEIGHT, AND LOCATION FROM FRONT EDGE OF THE UNIT INCLUDING BUMPERS	FRONT APPROACH PER 11B-306, 36" MAX. A.F.F., AND 5" MAX. FROM FRONT EDGE OF UNIT.			S:11B-602.2-EXC. S:11B-602.4 S:11B-602.5
	OPERABLE PARTS	6" MAX. FROM FRONT EDGE OF UNIT			S: 11B-602.3
	PROJECTION	18" - 19"			S: 11B-602.9
STANDARD WATER CLOSET					
ACCESSIBLE WATER CLOSET	CENTERLINE FROM WALL (TOILET OFFSET)	17" - 18" WHEEL CHAIR 17" - 19" AMBULATORY	12" - 15"	15" - 18"	T: 11B-604.9
	SEAT HEIGHT (TOP OF SEAT)	17" - 19"	12" - 15"	15" - 17"	T: 11B-604.9
STANDARD URINAL	RIM HEIGHT	24"			
ACCESSIBLE URINAL	RIM HEIGHT	17" MAX.			S: 11B-605.2
	PROJECTION	13 1/2" MIN.			S: 11B-605.2
	FLUSH CONTROL HEIGHT	44" MAX.			S: 11B-605.4
LAVATORY (W/ INSULATED SUPPLY AND DRAIN PIPES. NO ABRASIVE SURFACES OR SHARP EDGES ALLOWED.)	SINK RIM HEIGHT	34" MAX.	31" MAX.		S: 11B-606.2 S: 11B-606.3
	SINK KNEE CLEARANCE	27" MIN. KNEE CLEARANCE/ 29" APRON	24" MIN.		S: 11B-606.2 F: 11B-306.3

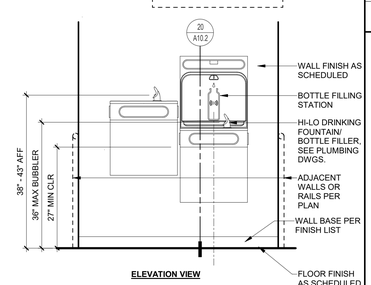
NOTES:
1. ALL FIXTURES AND ACCESSORIES ARE ACCESSIBLE UNLESS OTHERWISE NOTED OR DIMENSIONED.
2. SEE ENLARGED TOILET PLAN DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
3. ALL ACCESSORIES ARE TO BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 3'-4" FROM FLOOR TO CENTER OF FUNCTIONAL POINT.
4. ALL HEIGHT DIMENSIONS ARE A.F.F. (OR A.F.G. FOR EXTERIOR). ALL HORIZONTAL DIMENSIONS ARE TO FACE OF FINISH.
5. FOR TYPICAL ACCESSORY BACKING INFORMATION, SEE DETAIL13 / A10.2

TOILET FIXTURES AND TOILET ACCESSORY SCHEDULE 1/2" = 1'-0" 4

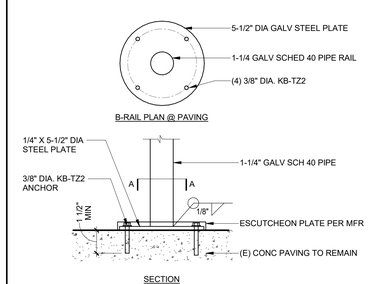


VERTICAL BLIND ANCHORAGE 3" = 1'-0" 30

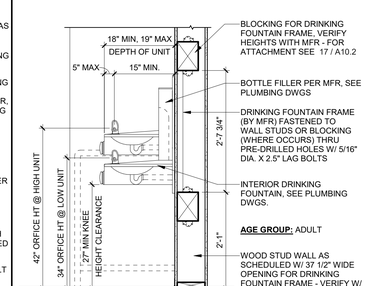




ACCESSIBLE DRINKING FOUNTAIN 3/4" = 1'-0" 25

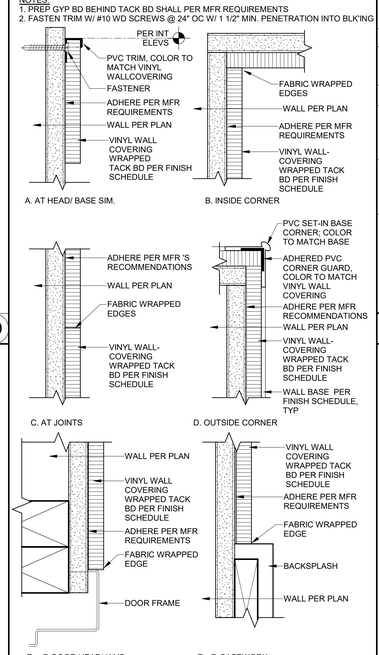


DRINKING FOUNTAIN RAIL ANCHORAGE 3" = 1'-0" 19

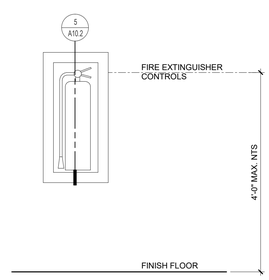


HI LO DRINKING FOUNTAIN SECTIONS/CLEARANCES 3/4" = 1'-0" 20

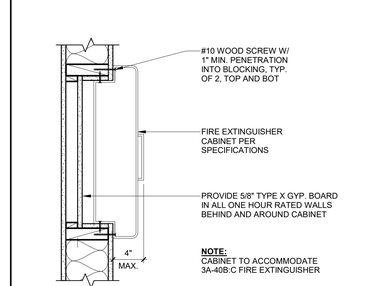
NOTES:
1. PREP GYP BD BEHIND TACK BD SHALL PER MFR REQUIREMENTS
2. FASTEN TRIM W/ #10 WD SCREWS @ 24" OC W/ 1 1/2" MIN. PENETRATION INTO BLK'ING



TACKBOARD ATTACHMENT 6" = 1'-0" 15



FIRE EXTINGUISHER CABINET MOUNTING 1" = 1'-0" 10



FIRE EXTINGUISHER CABINET ANCHORAGE 1 1/2" = 1'-0" 5

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120688 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/11/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum Center Drive, Suite 1640
Irvine, California 92618
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www.StudioW-Architects.com

ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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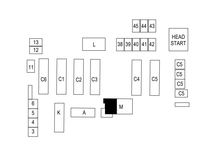
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

INTERIOR DETAILS

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A10.2
Drawn / Checked	
Author / Checker	

PRINT DATE: 3/8/2022 4:48:00 PM
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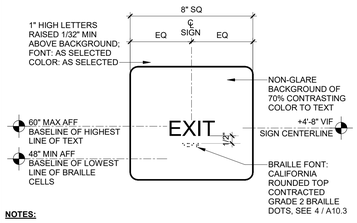
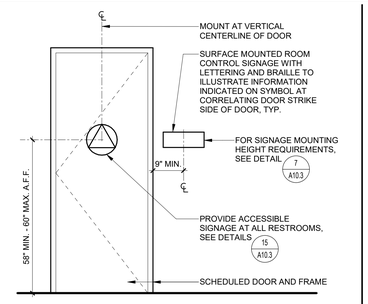


NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

EXIT SIGN "S3" 3" = 1'-0" 11



SIGN MOUNTING ELEVATION 1/2" = 1'-0" 6

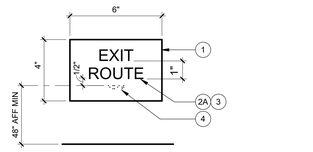
SIGNAGE GENERAL NOTES

1. FOR TYPICAL MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENTS, SEE 5 / A10.3
3. FOR SIGNAGE MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

SIGNAGE KEYNOTES

1. 1/4" THICK EXTRUDED CLEAR ACRYLIC SIGN WITH NON GLARE BACKGROUND OF 70% CONTRASTING COLOR TO TEXT AND ONE PIECE CONSTRUCTION PER SPEC BACKGROUND COLOR: TBD
2A. 1/32" RAISED TEXT, CENTER JUSTIFIED ON PLAQUE TEXT STYLE: HELVETICA, ALL CAPS TEXT HEIGHT: 3/4" U.O.N. TEXT COLOR: TBD
2B. 1/32" RAISED TEXT, LEFT JUSTIFIED STYLE: HELVETICA, ALL CAPS TEXT HEIGHT: 3/4" U.O.N. TEXT COLOR: TBD
3. VERIFY ROOM NAMES/NO'S PRIOR TO FABRICATION; 10 LETTERS PER LINE, MAX
4. CALIFORNIA ROUNDED TOP CONTRACTED GRADE 2 BRAILLE BELOW RAISED TEXT (11B-703.3.2). DISTANCE FROM BOTTOM OF RAISED LETTERS TO TOP OF BRAILLE CHARACTERS SHALL BE 3/8" MINIMUM AND 1/2" MAXIMUM. BRAILLE TO BE CENTER JUSTIFIED OR LEFT JUSTIFIED TO MATCH RAISED TEXT. FOR MORE INFORMATION ON BRAILLE REQUIREMENTS, SEE DETAIL 4 / A10.3
5. INTERNATIONAL SYMBOL OF ACCESSIBILITY PICTOGRAM; COLOR: TBD
6. NOT USED
7. RAISED IMAGE-COLOR: TBD
8. CONTRAST 70% WITH DOOR COLOR

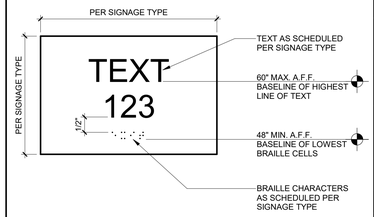
TYPICAL SIGNAGE NOTES 12" = 1'-0" 1



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

EXIT ROUTE SIGN "S4" 3" = 1'-0" 12



SIGNAGE MOUNTING HEIGHTS 6" = 1'-0" 7

TABLE 11B-703.3.1
BRAILLE DIMENSIONS

MEASUREMENT RANGE	MINIMUM IN INCHES MAXIMUM IN INCHES
DOT BASE DIAMETER	0.059" (1.5MM) TO 0.063" (1.6MM)
DISTANCE BETWEEN TWO DOTS IN THE SAME CELL *	0.100" (2.5MM)
DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS *	0.300" (7.6MM)
DOT HEIGHT RANGE	0.025" (0.6MM) TO 0.037 (0.9MM)
DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW *	0.395" (10MM) TO 0.400" (10.2MM)
* MEASURED CENTER TO CENTER	

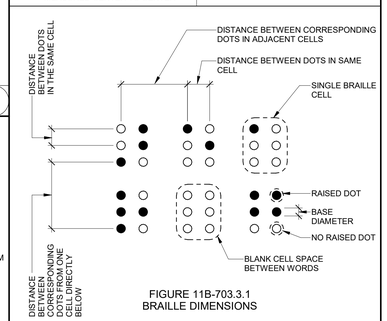
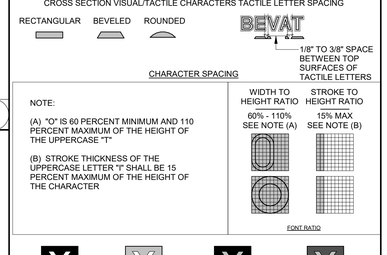
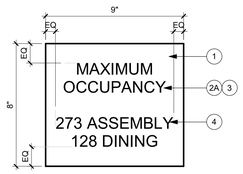


FIGURE 11B-703.3.1
BRAILLE DIMENSIONS

CROSS SECTION VISUAL/TACTILE CHARACTERS TACTILE LETTER SPACING



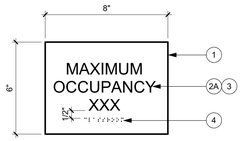
SIGNAGE DESIGN REQUIREMENTS 1 1/2" = 1'-0" 4



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

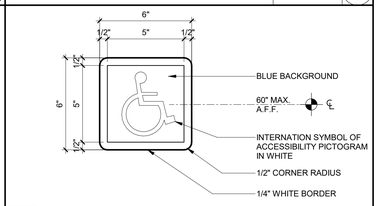
OCCUPANT LOAD SIGN "S10" 3" = 1'-0" 18



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

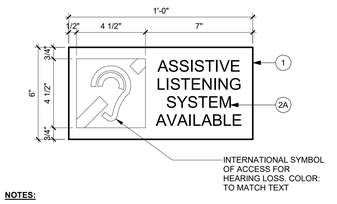
MAXIMUM OCCUPANCY SIGN "S5" 3" = 1'-0" 13



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3
6. SYMBOL PROPORTIONS SHALL APPROXIMATE CBC FIGURE 11B-703.7.2.1.

ACCESSIBE ENTRANCE SIGN "S1" 3" = 1'-0" 9



NOTES:

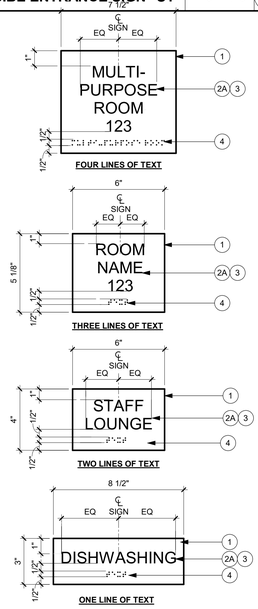
1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3
6. SYMBOL PROPORTIONS SHALL APPROXIMATE CBC FIGURE 11B-703.7.2.1.

ALS SIGN "S8" 3" = 1'-0" 19

NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

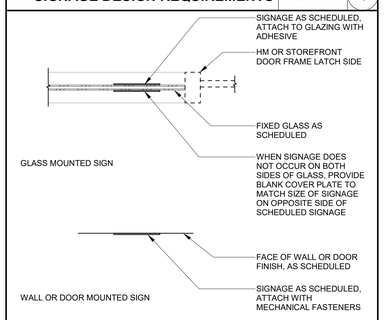
ALL GENDER WALL MTD SIGN "S6" 3" = 1'-0" 14



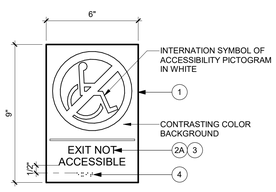
NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

ROOM ID SIGN "S2" 3" = 1'-0" 10



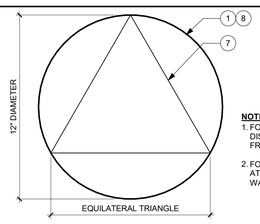
SIGNAGE MOUNTING TYPES 1" = 1'-0" 5



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

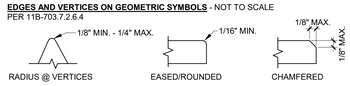
EXIT NOT ACCESSIBLE SIGN "S9" 3" = 1'-0" 20



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3

EDGES AND VERTICES ON GEOMETRIC SYMBOLS - NOT TO SCALE
PER 11B-703.7.2.6.4



ALL GENDER RR DOOR SIGN "S7" 3" = 1'-0" 15

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STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 12/15/2021	

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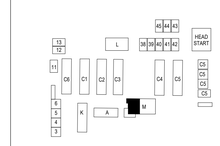
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

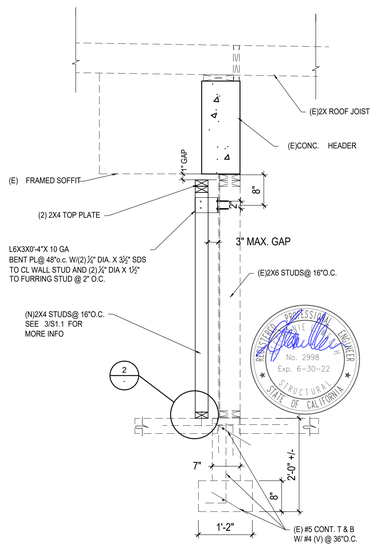
DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

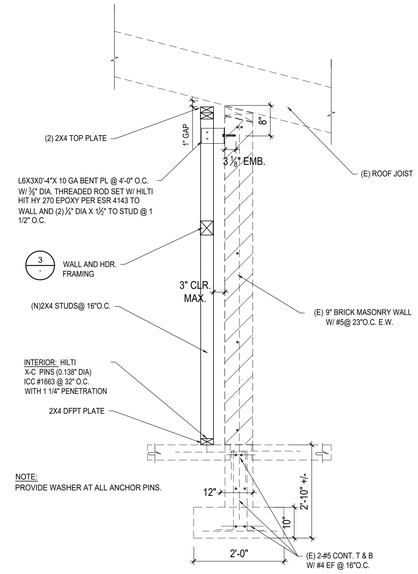
SIGNAGE DETAILS

Date	Project Number
03/04/2022	21029
Application Number	Drawing Number
04-120688	A10.3
Drawn / Author	Checked / Checker

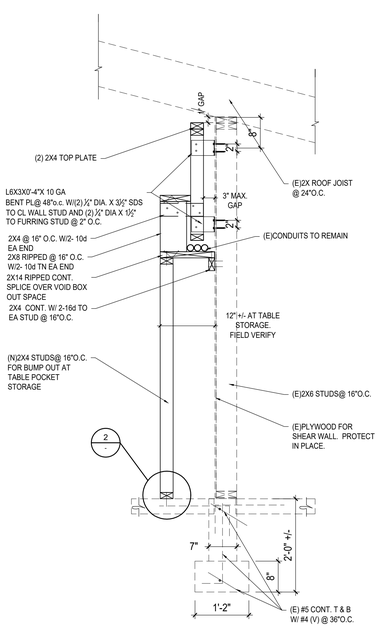
PRINT DATE: 3/5/2022 3:26:18 PM
FILE PATH: C:\Users\gillianc\Documents\21029-Buena-Park-USD-Gilbert-MPR-A19_gilliancAYESV.rvt



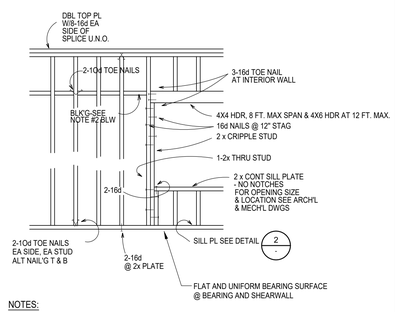
(N) INTERIOR FURRING WALL | 3/4" | 5



(N) INTERIOR FURRING WALL | 3/4" | 2



(N)TABLE FURRING WALL | 3/4" | 7



NOTES:

1. BLOCKING REQ'D AT CEILING LINE & 8'-0" o.c. MAX SPACING.
   2 x STUD WIDTH SOLID BLOCKING REQ'D. SEE SHEAR WALL DETAILS & SECTIONS FOR ADDITIONAL BLOCKING REQ'D.

NON-BREARING
STUD WALL FRAMING ELEVATION | 3/4" | 3

EXPANSION OR EPOXY - TYPE ANCHORS

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2019 CBC 1910A.5
2. INSTALLATION SHALL BE CONTINUOUSLY INSPECTED IN ACCORDANCE WITH ICC EVALUATION .
3. LOAD TEST FOR VALUES SHOWN U.N.O. ARE IN ACCORDANCE WITH CBC, SECTION 1910A.5.4
4. ALL EXPANSION BOLTS TO BE USED SHALL BE HILTI KB-TZ ANCHORS TYP PER ICC ESR-1917. ALL EPOXY BOLTS SHALL BE SIMPSON SET- 3G PER ICC ESR-4057. NO SUBSTITUTION SHALL BE MADE WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.

   HILTI KB TZ BOLT TESTING TABLE. FOR EPOXY BOLTS SEE SPECIFIC DETAIL FOR EMBEDMENT AND DIRECT PULL TESTING LOAD.

BOLT DIA.	MINIMUM DEPTH OF EMBEDMENT	REQUIRED INSTALLATION TORQUE FOR EXPANSION BOLT
3/8"	2"	25 FT-LBS
1/2"	3 1/4"	40 FT- LBS
5/8"	4"	60 FT- LBS
3/4"	4 3/4"	110 FT- LBS

TABLE NOTES:

A. TABULATED VALUES ARE BASED ONTHE ICC ESR REPORT #1917 AND SHALL BE INSTALLED WITH SPECIAL INSPECTION. THE TABULATED VALUES ARE FOR ANCHORS INSTALLED A MINIMUM OF 12 DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 12 DIAMETERS. SEE CBC 1910A.5.5 FOR ACCEPTANCE AND FAILURE CRITERIA.

B. WHEN THE EXPANSION-TYPE ANCHORS ARE TO BE USED FOR SILL PLATE BOLTING APPLICATIONS, 10% OF THE ANCHORS SHALL BE TENSION TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR OTHER STRUCTURAL APPLICATIONS, ALL SUCH EXPANSION ANCHORS SHALL BE TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR NONSTRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE, 50% OR ALTERNATE BOLTS IN A GROUP SHALL BE TENSION TESTED.

C. THE TESTING OF THE EXPANSION AND EPOXY ANCHORS SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO DSA ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, DSA ENFORCEMENT AGENCY SHALL DETERMINE IF THE PROPOSED ADDITIONAL TESTING REQUIREMENTS ARE ACCEPTABLE.

POWDER DRIVEN SHOT PINS (LOW VELOCITY)

1. SHOT PINS MAY BE USED FOR SHEAR LOADS AND THEY MAY BE USED IN TENSION TO SUPPORT LOADS LESS THAN 90 POUNDS FOR MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT, ETC. ANY SHOT ANCHORS MUST HAVE ICBO APPROVAL FOR USE ON CONCRETE CURBS.
2. THE ALLOWABLE LOADS SHALL BE 90 POUNDS OR 80 % OF ESR APPROVED VALUES, WHICHEVER IS LESS. QUALIFICATIONS FOR USE OF ALL POWER ACTUATED TOOLS MUST MEET ANSI A10.3 STANDARD AS REQUIRED BY THE MANUFACTURER AND ALL OSHA REQUIREMENTS.
3. TESTING - THE OPERATOR, TOOL AND FASTENER SHALL BE PRE - QUALIFIED BY THE PROJECT INSPECTOR. THE INSPECTOR SHALL OBSERVE THE TESTING OF THE FIRST 1- FASTENER INSTALLATIONS. A TEST "PULL - OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS. IF ANY PIN FAILS TESTING, TEST ALL PINS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL (20) CONSECUTIVE PASS, THEN RESUME THE INITIAL TESTING FREQUENCY.
4. SHOT PINS SHALL BE HILTI. X - U (ESR 2269) AND CAN BE USED TO CONNECT METAL STUD TRACK OR WOOD SILL TO
   - CONCRETE — X - U 0.157 SHANK DIA. W/ 1-1/2" MIN.\ PENETRATION

GENERAL

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE 2019 CALIFORNIA BUILDING CODE AND ALL LOCAL CODES.
2. STRUCTURAL DRAWINGS ARE PARTS OF CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND COORDINATE WITH ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS, AND SHALL NOTIFY THE ARCHITECT AND ENGINEERS OF ANY DISCREPANCIES.
3. STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR SHALL PROVIDE MEANS AND METHODS AS REQUIRED. PROVIDE ADEQUATE BRACING, SHORING, TEMPORARY STRUCTURES AND PARTIALLY COMPLETED PORTIONS OF WORKS COMPLYING WITH NATIONAL, STATE AND ALL LOCAL SAFETY ORDINANCES.
4. TYPICAL DETAILS AND SCHEDULES MAY NOT BE REFERENCED ON DRAWINGS. CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH ALL TYPICAL DETAILS AND SCHEDULES PRIOR TO PROCEED WITH WORK.
5. CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM ALL DAMAGE.
6. THE CONTRACTOR SHALL NOT DEVIATE FROM THE TENDERED DOCUMENTS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND ENGINEERS.
7. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. FOR ALL LOCATIONS OF DATUM ELEVATION 0.0; REFER TO ARCHITECTURAL AND SITE DRAWINGS. ALL ELEVATIONS INDICATED ON THE STRUCTURAL DRAWINGS ARE MEASURED WITH RESPECT TO THIS DATUM, UNLESS NOTED OTHERWISE.

DESIGN LOADS

1. WIND DESIGN LOADS
   - BASIC WIND SPEED.....105MPH
   - EXPOSURE..... C
   - INTERNAL PRESSURE COEFFICIENT..... ± 0.18
   - COMPONENT AND CLADDING..... -25 PSF (OUTWARD)
     +23 PSF (INWARD)
2. SEISMIC DESIGN LOADS
   - OCCUPANCY CATEGORY.....III
   - SITE CLASS.....D (DEFAULT)
   - SEISMIC DESIGN CATEGORY.....D
   - IMPORTANCE FACTOR.....1.25
   - S_s = 1.553 Fa=1.2
   - S_1 = 0.542 Fv=1.75
   - S_{DS} = 1.222
   - S_{D1} = 0.654 LATITUDE = 33.8677413; LONGITUDE = -118.0068521

BLDG	ANALYSIS PROCEDURE
ALL	STATIC

BLDG	DIRECTION	SEISMIC FORCE RESISTING SYSTEM	R	RHO	Cd	OMEGA	Cs
EXISTING MPR BUILDING	BOTH	SRMSW	5	1.0	3.5	2.5	0.301 (LRFD)

"SRMSW" - SPECIAL REINFORCED MASONRY SHEAR WALL

3. ROOF LIVE LOAD = 20PSF

WOOD

1. ALL WOOD MEMBERS SHALL BE DOUGLAS FIR LARCH #1 GRADE, EXCEPT BLOCKING MAY BE #2 GRADE, CONFORMING TO THE WCLIB GRADING RULES #16, OR AS SPECIFICALLY CALLED FOR ON THE DRAWINGS. EACH PIECE OF LUMBER SHALL BE GRADE MARKED. ALL MEMBERS TO HAVE MOISTURE CONTENT LESS THAN 19% AT TIME OF INSTALLATION.
2. ALL LUMBER WHICH COMES IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE DOUGLAS FIR NO. 2 OR BETTER, PRESSURE TREATED AND BEAR THE MARK INDICATING CONFORMANCE WITH THE REQUIREMENTS OF AWPA STANDARD U1 AND T1. THE LUMBER SHALL BE PRESSURE TREATED WITH THE CHEMICAL ACZA, BORATE OR EQUAL. WHERE SILLS ARE CUT, DRILLED OR NOTCHED THEY SHALL BE TREATED WITH A PRESERVATIVE THAT MEETS THE AWPA STANDARD U1 AND APPROVED BY THE ARCHITECT AND THE ENFORCEMENT AGENCY. ON ALL EXPOSED SURFACES FROM WHICH THE PRESERVATIVE TREATMENT HAS BEEN REMOVED. SILLS AT SHEAR WALLS AND BEARING WALLS SHALL BE FLAT AND UNIFORM ON CONCRETE SURFACE SO AS TO OBTAIN CONTINUOUS BEARING.
3. ALL PLYWOOD SHALL BE MANUFACTURED USING EXTERIOR GLUE AND SHALL CONFORM TO U.S. PRODUCT STANDARD PS-1, SECTION 7. PANELS SHALL CONFORM TO THE GRADES SPECIFIED ON THE DRAWINGS. PANELS EXPOSED TO WEATHER SHALL BE EXTERIOR GRADE. EACH PANEL SHALL BEAR MARKINGS IDENTIFYING THE QUALIFIED TESTING AND INSPECTION AGENCY, GRADE, NOMINAL THICKNESS, SPAN RATING, EXPOSURE DURABILITY CLASSIFICATION AND STANDARD TO WHICH IT IS CERTIFIED.
4. USE OF MACHINE NAILING IS SUBJECT TO A SATISFACTORY JOB SITE DEMONSTRATION FOR EACH PROJECT AND THE APPROVAL OF THE PROJECT ARCHITECT OR STRUCTURAL ENGINEER AND THE ENFORCEMENT AGENCY. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING IS NOT ALLOWED FOR 5/16 INCH PLYWOOD. IF THE NAIL HEADS PENETRATE THE OUTER PLY MORE THAN WOULD BE NORMAL FOR A HAND HELD HAMMER, OR IF MINIMUM ALLOWABLE EDGE DISTANCES ARE NOTE MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY AND MACHINE NAILING SHALL BE DISCONTINUED.
5. ALL BOLTED CONNECTIONS ARE TO BE RETIGHTENED PRIOR TO CLOSING IN.
6. NAILING SHALL BE WITH COMMON NAILS AND SHALL CONFORM TO THE CBC NAILING SCHEDULE TABLE 2304.10.1
7. SHEET METAL HANGERS, TIES, BRIDGING ANCHORS, ETC. SHALL BE BY THE SIMPSON COMPANY OR APPROVED EQUAL.
8. BLOCKING AND BRIDGING TO BE PROVIDED PER CBC 2308.4.6
9. FOR 10d NAILS AT PLYWOOD SHEAR WALLS AND ROOF DIAPHRAGMS, PROVIDE 1 1/2" MINIMUM PENETRATION INTO FRAMING PER AWS SDPWS (FORMERLY ANSI7AF & PA SDPWS) TABLES.

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PH: 714-352-6297
J.N.: 21-048

ARCHITECT	ENGINEER
	PROFESSIONAL ENGINEER No. 2998 Exp. 6-30-22 STRUCTURAL STATE OF CALIFORNIA

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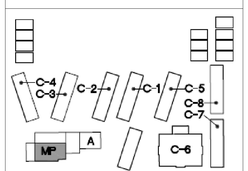
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA PLAN CHECK	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



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SCHOOL DISTRICT
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DSA BACKCHECK

CARL E. GILBERT
ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
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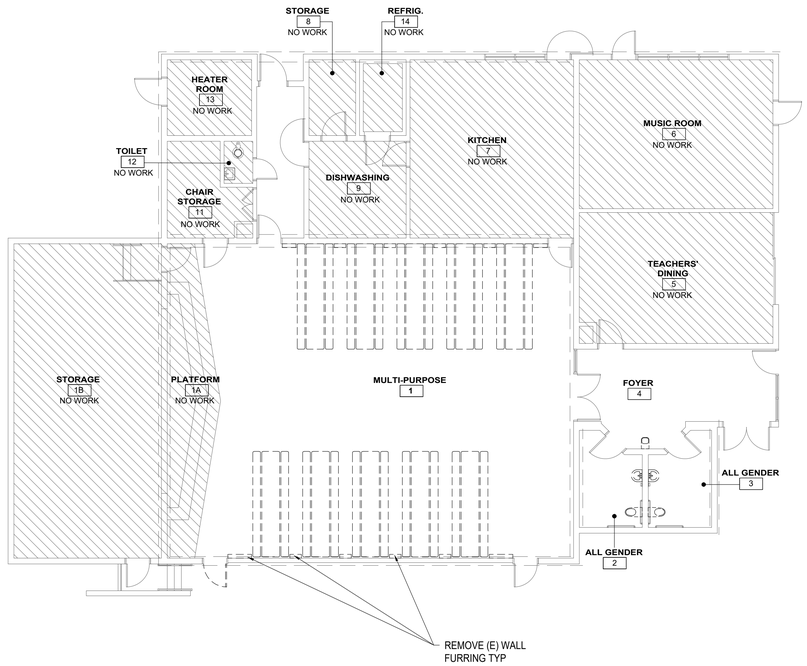
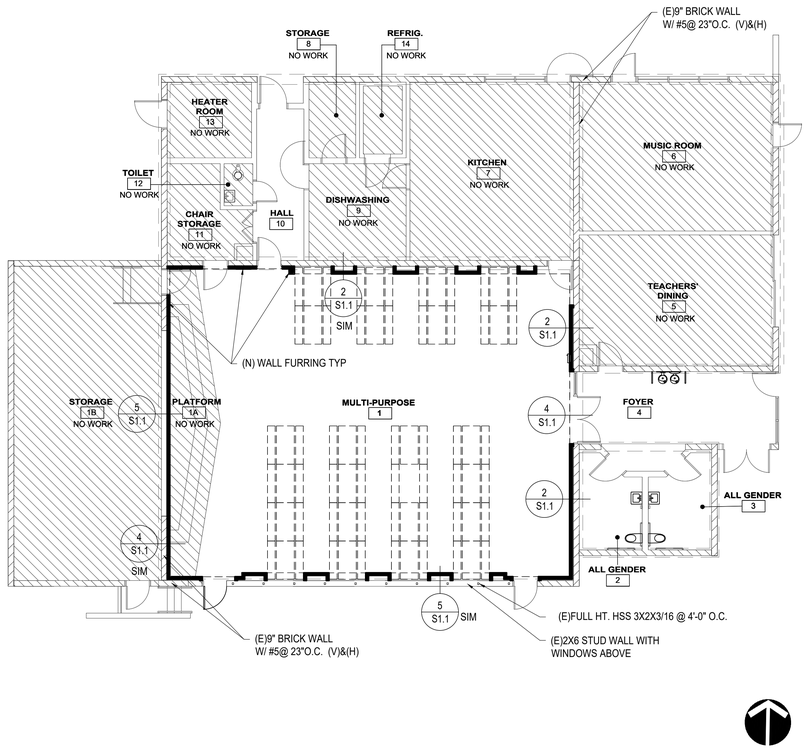
BUENA PARK, CA 90621

GENERAL NOTES/
STRUCTURAL DETAILS

Date	Project Number
03/04/2022	21029
Scale: AS NOTED	Drawing Number: S1.1
Drawn: MR	Checked: SW



MPR DEMOLITION FOUNDATION PLAN | 1/8" = 1'-0" | 1



MPR ALTERNATE FOUNDATION PLAN | 1/8" = 1'-0" | 2

KEYNOTES

NUMBER	NOTE

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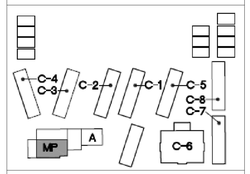

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DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

DEMOLITION / ALTERATION PLANS

Date	Project Number
03/04/2022	21029
Scale: AS NOTED	Drawing Number
Drawn: MR / Checked: SW	S2.1

FIXTURE SCHEDULE

ITEM	FIXTURE	ROUGH-IN CONNECTIONS: TRAP	WASTE	VENT	HOT WATER	COLD WATER	GAS	DESCRIPTION
WC 1	WATER CLOSET (ACCESSIBLE)	INT	4"	2"	--	1"	--	AMERICAN STANDARD (A/S) NO. 3461.001 "MADERA FLOWISE 16-1/2" HEIGHT ELONGATED FLUSHOMETER TOILET", SIPHON JET, FLOOR MOUNTED, ELONGATED BOWL, 16-1/2" HIGH. COMPLETE WITH SLOAN ROYAL NO. 111-1.28 GPF FLUSH VALVE, OLSONITE NO. 95SSCT SEAT AND A/S BOLT CAPS.
L 1	LAVATORY (ACCESSIBLE, CW ONLY)	1-1/4"	2"	1-1/2"	--	1/2"	--	AMERICAN STANDARD (A/S) NO. 0355.012 "LUCERNE WALL HUNG LAVATORY", 20" X 18", WALL HUNG. COMPLETE WITH CHICAGO NO. 3400-E39VPABCP METER FAUCET 0.35 GPM NON-AERATING SPRAY, McGUIRE NO. 155A 1-1/4" OUTLET "OPEN GRID P.O. PLUG", McGUIRE NO. PWB090NCO 1-1/4" L.A. PATTERN P-TRAP WITH TRAP AND SUPPLY COVERS, GALVANIZED NIPPLE AND CHROMIUM PLATED BRASS CASING, CHICAGO NO. 1017-ABCP LOOSE KEY STOP WITH RIGID SUPPLY, AND ZURN NO. Z-1231-EZR-WL ADJUSTABLE CONCEALED ARM CARRIER W/ SLEEVE FOR WASTE. MOUNT IN ACCORDANCE WITH ADA REQUIREMENTS.
EWC 1	ELECTRIC WATER COOLER W/BOTTLE FILLER (ACCESSIBLE)	1-1/2"	2"	1-1/2"	--	3/4"	--	ELKAY NO. LZSTL8WSLK, DUAL HEIGHT, SURFACE WALL MOUNTED, LIGHT GRAY GRANITE, BARRIER FREE, 8 GPH OF 50° F. WATER WITH 80° F. INLET WATER AT 90° F. AMBIENT, 1/5 HP, 115 VOLT, 1 PHASE. COMPLETE WITH CHICAGO NO. 45LKABCP ANGLE STOP WITH 1/2" FEMALE INLET & OUTLET. MOUNT AT ADA ACCESSIBLE HEIGHT.
WHA 1	WATER HAMMER ARRESTOR	--	--	--	--	--	--	ZURN NO. Z-1700 SERIES "SHOKTROL" WATER HAMMER ARRESTOR COMPLETE BEHIND ACCESS PANEL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. ALL ACCESSIBLE WATER CLOSETS SHALL HAVE FLUSH VALVE WITH HANDLE ON OPEN SIDE.
3. ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON DRAWINGS.
4. ALL PLUMBING FIXTURE VENTS TO TERMINATE A MINIMUM OF 12 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM ANY OUTSIDE AIR INTAKES.
5. EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS.
6. CONNECTION BETWEEN INCOMPATIBLE MATERIALS ABOVE GRADE AND INSIDE BUILDING SHALL BE MADE WITH TWO (2) DIELECTRIC UNIONS SEPARATED BY A TWELVE INCH (12") SECTION OF RED BRASS PIPE.
7. ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. ALL URNINALS SHALL HAVE CLEANOUTS ABOVE FIXTURE, CPC 707.4. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
8. SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBLE FIXTURE LOCATIONS AND MOUNTING HEIGHTS. INSULATE ALL EXPOSED HOT WATER AND DRAIN PIPING BELOW ACCESSIBLE LAVATORIES AND SINKS.
9. ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING.
10. ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA PLUMBING CODE 2019.
11. THESE DRAWINGS INDICATE THE SEWER, WATER, AND STORM DRAIN SYSTEMS TO POINT OF CONNECTION 5'-0" OUTSIDE OF THE BUILDING. CONTINUATION OF THESE SYSTEMS IS SHOWN ON THE CIVIL DRAWINGS AND IS SPECIFIED UNDER ANOTHER SECTION OF THE SPECIFICATIONS. THE PIPING SHALL BE INSTALLED TO MEET THE INVERT ELEVATIONS SHOWN ON THE CIVIL DRAWINGS.
12. INSULATION (SEE SPECIFICATION FOR TYPE REQUIRED) AND COVERING ON PIPE AND TUBING SHALL HAVE A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DENSITY NOT TO EXCEED 450 WHEN TESTED IN ACCORDANCE WITH 2019 C.B.C. SECTION 720.3.
13. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHERE TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. CMC 2019, CHAPTERS 7, 9 ,& 11.
14. ANY ALTERATIONS TO A STRUCTURAL MEMBER, SUCH AS CUTTING, BORING, BRAZING, DRILLING, WELDING, ETC. SHALL HAVE PRIOR WRITTEN APPROVAL OF ARCHITECT, STRUCTURAL ENGINEER AND DSA.
15. M.E.P. COMPONENT ANCHORAGE NOTE:

    ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

    1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
    2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRE) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
    3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVER BY DSA.

15. CONT.

    THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REVERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENTS IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

    A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
    B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL

    THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE THE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE THE DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

16. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCE AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3, AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC SECTIONS 1617A.1.24, 1617A.1.25, AND 1616A.1.26.

    THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. OSHPD OPM FOR 2019 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

    MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

    MP [ ] MD [ ] PP [ ] E [ ] – OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

    MP [ ] MD [ ] PP [X] E [ ] – OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #0043-13.

    –

LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	S OR W	SOIL OR WASTE ABOVE FLOOR
	S OR W	SOIL OR WASTE BELOW FLOOR OR GRADE
	V	SANITARY VENT
	CW	COLD WATER
		DIRECTION OF FLOW
	SOV	SHUT-OFF VALVE
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
		RISER UP
		RISER DOWN
	ABV	ABOVE
	AP	ACCESS PANEL
	BEL	BELOW
	CLG	CEILING
	CONT	CONTINUATION
	COTG	CLEANOUT TO GRADE
	DN	DOWN
	EXIST	EXISTING
	FLR	FLOOR
	POC	POINT OF CONNECTION
	PLCS	PLACES

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DATE: 03/11/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum Center Drive, Suite 1640
Irvine, CA 92618
[T] 949.774.2905
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PDS
PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW R. POCOCK Exp. 12/31/22 MECHANICAL STATE OF CALIFORNIA

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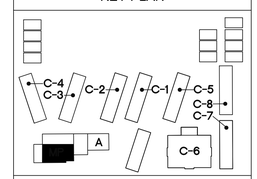
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



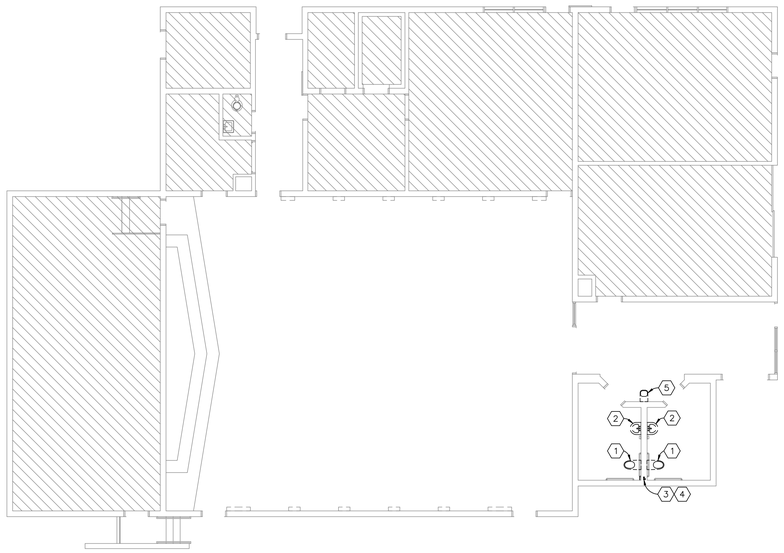
BUENA PARK
SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT
ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES

Date	Project Number
03/04/2022	21029
Scale	Drawing Number
NONE	P0.1
Drawn: NH	Checked: PDS

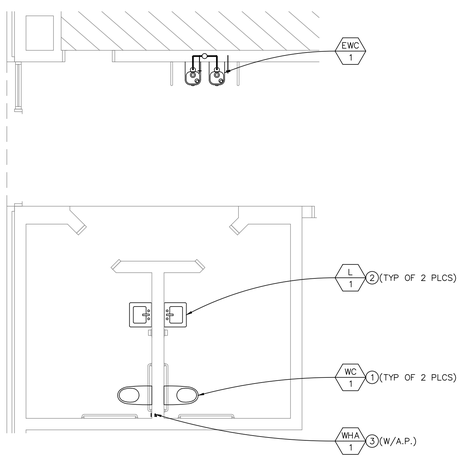


NORTH

PLUMBING DEMOLITION FLOOR PLAN

SCALE 1/8"=1'-0"

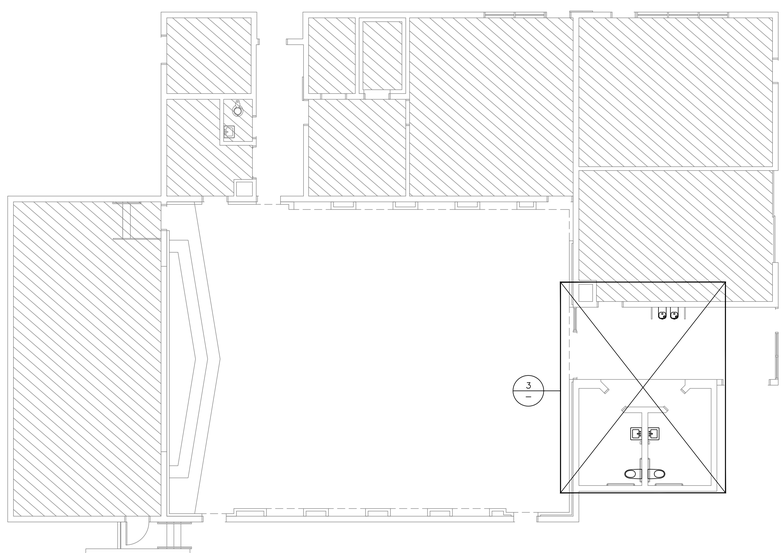
2



PLUMBING ENLARGED FLOOR PLAN

SCALE 1/4"=1'-0"

3



NORTH

PLUMBING ALTERATION FLOOR PLAN

SCALE 1/8"=1'-0"

1

KEYNOTES

DEMOLITION NOTES:

1. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL ITEMS INDICATED TO BE REMOVED. CONTRACTOR SHALL VERIFY ALL SUCH ITEMS WITH OWNER PRIOR TO REMOVAL. ALL ITEMS NOT REFUSED BY OWNER SHALL BE REMOVED INTACT AND FULLY FUNCTIONAL BY CONTRACTOR FOR OWNER'S USE. ALL ITEMS REFUSED BY OWNER SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.
2. REMOVE EXISTING FIXTURES AND EQUIPMENT AS INDICATED. HOT WATER, COLD WATER, VENT AND/OR GAS PIPING SERVING SUCH ITEMS SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION WITHIN WALL OR ABOVE CEILING AND CAPPED OR PLUGGED UNLESS OTHERWISE NOTED (U.O.N.). WASTE PIPING SERVING SUCH FIXTURES SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION BELOW FINISHED FLOOR OR BEHIND WALL AND CAPPED OR PLUGGED U.O.N. ASSOCIATED EXISTING DEFUNCT PIPING IN CONCEALED LOCATIONS ABOVE CEILING, WITHIN WALLS, BELOW SLAB, OR BELOW GRADE SHALL BE ABANDONED IN PLACE OR REMOVED AS NECESSARY TO AVOID INTERFERENCE WITH NEW WORK. ASSOCIATED EXISTING DEFUNCT PIPING AND COMPONENTS IN EXPOSED LOCATIONS SHALL BE REMOVED U.O.N. (INCLUDING FLOOR DRAINS, WALL AND FLOOR CLEANOUTS, CLEANOUTS TO GRADE, ACCESS PANELS, SHUT-OFF VALVES AND COCKS, YARD BOXES, MANHOLES, CATCH BASINS, AND OTHER EXPOSED COMPONENTS). EXISTING DEFUNCT ELECTRICAL COMPONENTS SERVING EXISTING TO BE REMOVED EQUIPMENT SHALL BE DEMOLISHED AND REMOVED TO POINT OF ORIGIN.
3. EXISTING PLUMBING INFRASTRUCTURE FOR BUILDING TO BE DEMOLISHED AND/OR ABANDONED IN PLACE.

DEMOLITION KEY NOTES:

1. EXISTING WATER CLOSET TO BE REMOVED BY PLUMBING CONTRACTOR.
2. EXISTING LAVATORY TO BE REMOVED BY PLUMBING CONTRACTOR.
3. EXISTING WATER HAMMER ARRESTOR AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
4. EXISTING SHUT OFF VALVE AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
5. EXISTING DRINKING FOUNTAIN TO BE REMOVED BY PLUMBING CONTRACTOR.

CONSTRUCTION NOTES:

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.
3. WHERE PLANS INDICATE NEW FIXTURES OR EQUIPMENT CONNECTING TO EXISTING SERVICES, PLUMBING CONTRACTOR SHALL MODIFY AND/OR EXTEND EXISTING PIPING OR ROUGH-INS AS REQUIRED TO SUIT THE NEW FIXTURE.

CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER CLOSET.
2. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW LAVATORY.
3. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR WATER HAMMER ARRESTOR AND SHUT OFF VALVE.

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DATE: 03/11/2022

STUDIO W ARCHITECTS

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PDS
PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW R. POCOCK MECHANICAL STATE OF CALIFORNIA Exp. 3/31/22

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REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACK CHECK	03/04/2022
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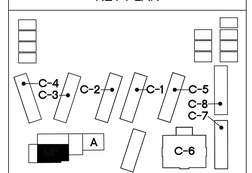
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

CARL E. GILBERT ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7255 8TH ST
BUENA PARK, CA 90621

PLUMBING DEMOLITION AND FLOOR PLANS

Date	Project Number
03/04/2022	21029
Scale	Drawing Number
1/8"=1'-0"	P1.1
Drawn NH	Checked PDS

WHITAKER ELEMENTARY SCHOOL

BUENA PARK SCHOOL DISTRICT

DSA File No. 30-4
App. No. 04-120689
PTN. 66456-40

PROJECT MANUAL

MARCH 4, 2022

PROJECT #21030

Studio W Architects

SEALS PAGE

BUENA PARK SCHOOL DISTRICT
JAMES A. WHITAKER ELEMENTARY SCHOOL-MULTI-PURPOSE ROOM ALTERATION

OWNER:
Buena Park School District
6885 Orangethorpe Ave.
Buena Park, CA 90620

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DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

ARCHITECT:
Studio W Architects
400 Spectrum Center Drive
Suite 1640
Irvine, CA 92618

By: _____ 10/15/2021
Brian P. Whitmore, AIA, LEED AP — Date Signed
President & CEO

LICENSED ARCHITECT
BRIAN P. WHITMORE
No. C 30345
Ren. 9/30/23
STATE OF CALIFORNIA

CIVIL ENGINEER:
KPFF Consulting Engineers
18400 Von Karman Ave.
Suite 600
Irvine, CA 92612

By: _____ 03/03/2022
Ali Khamsi, PE — Date Signed
Managing Principal

REGISTERED PROFESSIONAL ENGINEER
ALI KHAMSI
No. C74768
Exp. 12/31/23
CIVIL
STATE OF CALIFORNIA

STRUCTURAL ENGINEER:
Welsh Structures, Inc.
12722 Barrett Ln, Santa Ana, CA 92705

By: _____ 10/15/2021
Stephanie Welsh, S.E., Leed AP — Date Signed
President

REGISTERED PROFESSIONAL ENGINEER
STEPHANIE L. WELSH
No. 2998
Exp. 6-30-22
STRUCTURAL
STATE OF CALIFORNIA

PLUMBING ENGINEER:
Pocock Design Solutions
14451 Chambers Road
Suite 210
Tustin, California 92780:

By: _____ 10/15/2021
Andrew Gossman, PE, HFDP, LEED AP BD+C — Date Signed
Principal

REGISTERED PROFESSIONAL ENGINEER
ANDREW R. GOSSMAN
No. M35839
Exp. 3/31/22
MECHANICAL
STATE OF CALIFORNIA

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS
011000 Summary Studio W
012300 Alternates Studio W
012600 Contract Modification Procedures Studio W
012900 Payment Procedures Studio W
013100 Project Management and Coordination Studio W
013200 Construction Progress Documentation Studio W
013300 Submittal Procedures Studio W
014000 Quality Requirements Studio W
014200 References Studio W
015000 Temporary Facilities and Controls Studio W
016000 Product Requirements Studio W
017300 Execution Requirements Studio W
017419 Construction Waste Management Studio W
017700 Closeout Procedures Studio W
017823 Operation and Maintenance Data Studio W
017839 Project Record Documents Studio W
017900 Demonstration and Training Studio W

DIVISION 2 - SITE CONSTRUCTION
024119 Selective Demolition Studio W

DIVISION 5 - METALS
051200 Structural Steel Framing Studio W
055000 Metal Fabrications Studio W

DIVISION 6 - WOOD AND PLASTICS
061000 Rough Carpentry Welsh
062000 Finish Carpentry Welsh
064100 Paneling Studio W
068200 Fiber Reinforced Plastic (FRP) Panels Studio W

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
071909 Concrete Moisture and Alkalinity Testing Studio W
071920 Concrete Moisture and Alkalinity Barrier Studio W
072100 Building Insulation Studio W
076500 Flexible Sheet Flashing Studio W
079200 Joint Sealants Studio W

DIVISION 8 - DOORS AND WINDOWS
081113 Steel Doors and Frames Studio W
081416 Flush Wood Doors Studio W
083113 Access Doors and Frames Studio W
083214 Folding Aluminum-Framed Glass Doors Studio W.
084113 Aluminum-Framed Entrances and Storefronts Studio W
087100 Door Hardware Allegion
088000 Glazing Studio W

DIVISION 9 – FINISHES
092900 Gypsum Board Studio W
093000 Tiling Studio W
095123 Acoustical Tile Ceilings Studio W
096519 Resilient Tile Flooring Studio W
099100 Painting Studio W

DIVISION 10 - SPECIALTIES
101100 Visual Display Surfaces Studio W
101400 Signage Studio W
102800 Toilet and Bath Accessories Studio W
104400 Fire Protection Specialties Studio W

DIVISION 11 - EQUIPMENT
115217 Assistive Listening Devices Studio W

DIVISION 12 - FURNISHINGS
122116 Vertical Louver Blinds Studio W
126815 Folding Tables and Benches Studio W

DIVISION 22 – PLUMBING
220518 Escutcheons for Plumbing Piping Pocock
220523 General-Duty Valves for Plumbing Piping Pocock
220529 Hangers and Supports for Plumbing Piping and Equipment Pocock
220553 Identification for Plumbing Piping and Equipment Pocock
220719 Plumbing Piping Insulation Pocock
221116 Domestic Water Piping Pocock
221119 Domestic Water Piping Specialties Pocock
221316 Sanitary Waste and Vent Piping Pocock
221319 Sanitary Waste Piping Specialties Pocock
224213.13 Commercial Water Closets Pocock
224216.13 Commercial Lavatories Pocock
224713 Drinking Fountains Pocock

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING - none

DIVISION 26 – ELECTRICAL - none

DIVISION 31 – EARTHWORK
311000 Site Clearing KPFF

DIVISION 32 - EXTERIOR IMPROVEMENTS
320120 Detectable Warning Surfaces Studio W
321216 Hot-Mix Asphalt (HMA) Paving KPFF
321313 Concrete Paving KPFF
323113 Chain-Link Fences and Gates Studio W

END OF TABLE OF CONTENTS

DIVISION 1
GENERAL REQUIREMENTS

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Use of premises.
   3. Work restrictions.
   4. Specification formats and conventions.
   5. Pollution Control.
   6. Storm Water Pollution Prevention Plan.
   7. Lead-Containing materials.
   8. Additional DSA requirements.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Multi-Purpose Room Alteration.

B. Project Location: James A. Whitaker Elementary School.

C. Architect: Studio W Architects.

D. The Work consists of the following:
   1. The Work includes alteration of multi-purpose room and site work.
   2. The intent of these drawings and specifications is that the alteration, rehabilitation or reconstruction is to be in accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the contract documents wherein the finished work will not comply with Title 24, California Code of Regulations, a Construction Change Document, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by Division of the Sate Architect before proceeding with the repair work.

1.4 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.5 WORK RESTRICTIONS

A. On-Site Work Hours:
   1. Work shall be generally performed inside the existing building during normal business working hours of 8 a.m. to 5 p.m., Monday through Friday, except otherwise indicated.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI's MasterFormat 2004 numbering system.
   1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
   2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.7 POLLUTION CONTROL

A. Provide positive methods, means and facilities required to prevent contamination of the soil, water or atmosphere by the discharge of noxious substances from the construction operations.

1.8 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. The contractor shall submit a Storm Water Pollution Prevention Plan for approval by the City's Public Works and Community Development Departments. The plan shall show erosion control measures and indicate locations of staging, fueling, equipment and employee parking, and storage/stockpile locations. Locations for concrete washout shall be shown, as well as gravel site entrances and/or metal grates to keep soil from being deposited on City streets. The plan shall note that street sweeping shall occur as often as necessary, to ensure that no dirt or dust will remain on City streets. Drip pans shall be used under parked equipment and visqueen shall be shown on the plan to protect the soil in the fueling area. Only minor vehicle maintenance shall occur on-site. Maintenance shall occur in the fueling area and soil shall be protected by drip pans and visqueen.

B. Prepare a Storm Water Pollution Prevention Plan (SWPPP) and file a Notice of Intent with the State Water Resources Control Board for this project. The SWPPP will provide Best Management Practice (BMP) methods and controls for wet weather grading activities and erosion control for both onsite and offsite improvements, in accordance with the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The SWPPP shall include an erosion control plan.

1.9 MISCELLANEOUS PROVISIONS

A. General: Comply with the Project Conditions of Approval for both noise and dust control. If there is any conflict between drawings and specifications and the Project Conditions of Approval regarding noise and dust control, the Project Conditions of Approval shall govern.

B. Noise Control: The Contractor shall install noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction Equipment noise at the Site shall be limited and only as permitted by applicable law, rule or regulation. If classes are in session at any point during the progress of the Work, and, in the Owner's reasonable discretion, the noise from any Work disrupts or disturbs the students or faculty or the normal operation of Owner, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

C. Dust Control. The Contractor shall be fully and solely responsible for maintaining and upkeeping all areas of the Site and adjoining areas, outdoors and indoors, free from flying debris, grinding powder, sawdust, dirt and dust as well as any other product, product waste or work waste, that by becoming airborne may cause respiratory inconveniences to persons, particularly to students and Owner's personnel. Additionally, the Contractor shall take specific care to avoid deposits of airborne dust or airborne elements. Such protection devices, systems or methods shall be in accordance with the regulations set forth by the EPA and OSHA, and other applicable law, rule or regulation. Additionally, the Contractor shall be the sole party responsible to regularly and routinely clean up and remove any and all deposits of dust and other elements. Damage and/or any liability derived from the Contractor's failure to comply with these requirements shall be exclusively at the cost of the Contractor, including, without limitation, any and all penalties that may be incurred for violations of applicable law, rule or

regulation, and any amounts expended by the Owner to pay such damages shall be due and payable to the Owner on demand. Contractor shall replace any damages property or part thereof and professionally clean any and all items that become covered or partially covered to any degree by dust or other airborne elements. If classes are in session at any point during the progress of Work, and, in the Owner's reasonable discretion, flying debris, grinding powder, sawdust, dirt or dust from any Work disrupts or disturbs the students or faculty or the normal operation of the college, at the Owner's request, the Contractor shall schedule the performance of all such Work around normal college hours and make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall such arrangements result in adjustment of the Contract Price or the Contract Time.

1.10 LEAD-CONTAINING MATERIALS.

A. The Contractor shall assume that all ceramic tile and painted or varnished surfaces in the school district contain detectable levels of lead which trigger compliance with California Code of Regulation, Title 8, Section 1532.1. In addition, waste products from these materials could contain lead at levels which are subject to the hazardous waste requirements in the California Code of Regulations, Title 22, Sections 666260.1 - 66263.12 and 66268.1 - 66268.124 and the health and Safety Code Section 25157.8 and 25163, subdivision (c).

B. It is the Contractor's responsibility to handle and dispose of these materials in accordance with the regulations. If failure to comply with these regulations results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective action.

C. Lead-based paint should be removed only by professionals trained in hazardous material removal. A trained professional must follow very detailed procedures to minimize, control and contain lead dust generated by the removal process.
   1. The room should be sealed from the rest of the building. All furniture, carpets and drapes should be removed.
   2. Workers should wear respirators designed to avoid inhaling lead.
   3. No eating or drinking should be allowed in the work area. All food and eating utensils should be removed from the room. All cabinets as well as food contact surfaces should be covered and sealed.
   4. Occupants should be kept out of the room until the job is completed.
   5. Clothing worn in the room should be disposed of after working. The work clothing should not be worn in other areas of the building.
   6. Debris should be cleaned up using special vacuum cleaners with HEPA (high efficiency particle absorption) filters. A wet mop should be used after vacuuming.

1.11 ADDITIONAL DSA REQUIREMENTS

A. Comply with the following:
   1. Compliance with Title 24, for Parts 1-6 and 9.
   2. Title 24, Parts 1-5 shall be kept on site during construction.
   3. If any conflict or inconsistencies exist between the specifications and the drawings (including the general notes), more stringent requirements shall take precedence.
   4. Addenda:

a. In accordance with Section 4-338(a) of the California Administrative Code, changes or alterations of the approved plans and specifications prior to the letting of a construction contract for the Work shall be made by means of addenda, which shall be submitted to and approved by Division of the Sate Architect (DSA) prior to distribution to contractors.
b. Addenda shall be stamped and signed by Architect or Engineer in general responsible charge of preparation of the plans and specifications, and by the Architect or Engineer delegated responsibility for the portion affected by the addenda.
c. Addenda issued during bidding, if any, will be inserted following this page in the Contract Documents sets issued for construction. The provision of all addenda shall become part of the Contract Documents and Contractor shall be obligated to construct the Project in accordance with the Contract Documents as modified or supplemented by the addenda provisions.

5. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation. (IR-A6) (Section 4-338(c), Part 1)
6. Construction Change Document (Section 4-338 (c), Part 1) must be signed by all the following:
   a. A/E of Record.
   b. Owner (change order only).
   c. SEOR (when applicable).
   d. Delegated Professional Engineer (when applicable).
   e. DSA.
7. Project Inspector and testing lab must be employed by the Owner and approved by all of the following:
   a. A/E of Record.
   b. SEOR (when applicable).
   c. DSA.

B. Tests and Inspections - Chapter 17A:
1. All tests shall be performed by a testing facility acceptable to the architect and DSA. The testing facility shall be directly employed by the school district and no other entity or individual. Section Title 24, Part 1, Section 4-333 and 4-335.
2. Test reports shall be addressed to, and sent to, the school district by the testing facility. Copies of all test reports shall be sent to DSA, the architect, the structural engineer, and the project inspector by the testing facility. All reports shall be sent within 14 days of the date of the test. See Title 24, Part 1, Section 4-333 and 4-335.
3. A Verified Report, sighed by the California licensed civil engineer in charge of the testing facility which conducted the tests, shall be submitted to DSA upon completion of the project. The verified report shall state that all tests and inspections were made as required by the DSA approved documents. If the tests or inspections indicate that materials or workmanship did not meet the requirements of the DSA approved documents, the Verified Report shall list all noncompliant work. A copy of all test reports involving unresolved noncompliant work shall be attached to the Verified Report. In the event that not all required tests or inspections were made by the testing facility making this verified report, those tests and inspections not made shall be listed on the Verified Report. See Title 24, Part 1, Section 4-333 and 4-335.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. All substitutions affecting access compliance safety, fire life safety, or structural safety shall be considered as Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE

A. As indicated on Drawings.

END OF SECTION 012300

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:
   1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect may issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, or Changes not affecting the Structural Safety, Access Compliance or Fire & Life Safety portions of the work, on AIA Document G710, "Architect's Supplemental Instructions" or an equivalent form acceptable to District and subject to DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements for DSA Construction Change Document – Category B.

1.4 PROPOSAL REQUESTS (BULLETIN)

A. Owner-Initiated Proposal Requests: Architect may issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.5 CONSTRUCTION CHANGE PROCESS - DSA

A. Changes or alterations of the approved plans or specifications after a contract for the work has been let affecting the Structural, Access or Fire-Life Safety portions of the project shall be made only by means of Construction Change Documents submitted to and approved by DSA prior to commencement of the work shown thereon. Construction Change Documents shall comply with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements. Construction Change Documents shall be made using DSA form 141 and state the reason for the change and the scope of work to be accomplished, and, where necessary, shall be accompanied by supplementary drawings referenced in the text of the change order. All Construction Change Documents and supplementary drawings shall be stamped and signed by the architect or engineer in general responsible charge of observation of the work of construction of the project and by the architect or registered engineer delegated responsibility for observation of the portion of the work of construction affected by the change order, shall bear the approval of the school board and shall indicate the associated change in the project cost, if any. One copy of each Construction Change Documents is required for the files of DSA.

B. Construction Change Documents shall be signed by Architect of Record, Owner, Structural Engineer (when applicable), Delegated Professional Engineer (when applicable), and DSA.

C. No changes shall be made to approved documents without DSA approval.

D. All Construction Change Documents shall be signed by Architect and approved by DSA.

1.6 CONSTRUCTION (FIELD) CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with Continuation Sheets.
      b. Submittals Schedule.
      c. Contractor's Construction Schedule.
   2. Submit the Schedule of Values to Architect at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.
   3. No payment applications will be signed by the Architect prior to the Contractor submitting, and the Architect reviewing, a schedule of values.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Submit draft of AIA Document G703 Continuation Sheets.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.
      1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times:
   1. The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
   2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor's Construction Schedule (preliminary if not final).
   4. Products list.
   5. Schedule of unit prices.
   6. Submittals Schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   9. Copies of building permits.
   10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   11. Initial progress report.
   12. Report of preconstruction conference.
   13. Certificates of insurance and insurance policies.
   14. Data needed to acquire Owner's insurance.
   15. Initial settlement survey and damage report if required.

G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Project meetings.
   2. Requests for Interpretation (RFIs).

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for electronic submittals.
   2. Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
   3. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   4. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Submit electronic submittals directly to extranet specifically established for Project.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
4. Frequency of Attendance by Architect: Limited by Architect/Owner Contract.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing, if any.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for RFIs.
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Distribution of the Contract Documents.
   j. Submittal procedures.
   k. Preparation of Record Documents.
   l. Use of the premises.
   m. Work restrictions.
   n. Owner's occupancy requirements.
   o. Responsibility for temporary facilities and controls.
   p. Construction waste management and recycling.
   q. Parking availability.
   r. Office, work, and storage areas.
   s. Equipment deliveries and priorities.
   t. First aid.
   u. Security.
   v. Progress cleaning.
   w. Working hours.
3. Minutes: Record and distribute meeting minutes electronically.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. The Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written recommendations.
   n. Warranty requirements.
   o. Compatibility of materials.

p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
1) Review schedule for next period.
b. Review present and future needs of each entity present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.

15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes electronically.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.6 RFIs:

A. General:
   1. Contractor may submit a RFI to the Architect seeking clarification or interpretation of the contract documents. If in the Contractor's opinion the nature of the RFI requires a discussion, rather than simply an answer, the Contractor shall call the Architect to have such a discussion. The results of that discussion as well as all other RFI's must be presented in writing on a form approved in advanced by the Architect along with any supporting information or data, as well as the Contractor's recommended resolution. An oral RFI or a RFI presented on an unapproved form, or without adequate supporting information and Contractor's recommended solution, will be attributed solely to the contractor. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction means, methods, techniques, sequences, or procedures of the Contractor.
   2. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
   3. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information which is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the Architect in responding to a RFI.
   4. Architect's response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

B. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

C. Frivolous or Unnecessary RFIs: Cost of design professional’s time will be billed or deducted from progress payment.

D. Electronic RFIs: Follow vendor's instruction.
   1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow 21 days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

F. RFI Log: Prepare, maintain, and submit as instructed by electronic submittal vendor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. RFI Form.

END OF SECTION 013100

RFI FORM

Project:	RFI No:
Project No:	
To:	Date:
From:	
Subject:	
Discipline:	Category
Specification Section Title:	
Section Number: Page:	Article/Paragraph:
Sheet Number:	Detail:

Question:

Suggestion:

☐Attachment:

Undersigned certifies:

- Both drawings and specification sections were thoroughly reviewed.
- Processing time for frivolous RFIs will be charged back to Contractors at A/E billable rates.

Desired Response Date:	(However, A/E still have specified days to respond.)
Cost Impact: $	Schedule Impact: days
Drawing Impact:	Submitted by:
Signed:	Date:

Answer:

Answered by:

Signed: Date:

Copies: ☐ Owner ☐Consultants ☐ ☐
☐ File

1. A/E review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.
2. The use of a RFI is limited to clarification of the contract documents. Contractor will limit each RFI to a single issue. Information that is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the A/E in responding to a RFI.
3. A/E response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

End of RFI Form

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Three Week Look-Ahead Schedule.
   4. Daily construction reports.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
   2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
   3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
   4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's final release or review.

B. Contractor's Construction Schedule: Submit three opaque copies of schedule, large enough (minimum 11 x 17) to show entire schedule for entire construction period.

C. Daily Construction Reports: Submit two copies at weekly intervals.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Concurrent with the development of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the submittal schedule with the Contractor's construction schedule described above.
   1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
   2. The Architect will review the schedule and indicate which submittals may be deleted from the submission requirement. The deletion of the submittal requirement for an item does not release the Contractor from any requirements of the Construction Contract, General Conditions or Plans and Specifications.

B. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
   1. Scheduled date for the first submittal.
   2. Related Section number.
   3. Submittal category.
   4. Name of subcontractor.
   5. Description of the part of the Work covered.
   6. Scheduled date for resubmittal.
   7. Scheduled date the Architect's final release or review.

C. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 15 days of the date established for "Commencement of the Work". The Construction Schedule must be submitted and accepted prior to approval of first pay application.
   1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as identified in the "Schedule of Values".
   2. Within each time bar indicate estimated completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
   3. Prepare the schedule on a sheet, or series of sheets, of stable reproducible media, of sufficient width to show data for the entire construction period.
   4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
   5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
   6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating "pre-calculated" and "actual" costs. On the line show dollar-volume of work performed as of the dates used for preparation of payment requests.
   1. Refer to Section "Payment Procedures" for cost reporting and payment procedures.

2.3 THREE WEEK LOOK-AHEAD SCHEDULE

A. Prepare weekly (or as determined by scheduled meeting times), prior to Project meetings, a computer-generated 3-week look-ahead schedule (bar chart) which is consistent with the Contractors schedule and depicts daily labor activities. The schedule will consist of the prior week, current week and the following 3 weeks.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial Completions and occupancies.
   19. Substantial Completions authorized.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates changes, including, but not limited to, changes in durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of reviewed schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Submittals Schedule Form.

END OF SECTION 013200

SUBMITTAL SCHEDULE FORM

☐ Preliminary Submittal Schedule: Include submittals required during the first 60 days of construction.
☐ Complete Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

Project: From:

To: Date:

Scheduled Initial Submittal Date	**Spec Section**		**Type:** ☐ **Action** ☐ **Info Only**	**Name of Subcontractor**	**Description**	**Scheduled Date of Approval**
	No.	**Title**				

End of Submittal Schedule Form

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for electronically submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Consult individual sections of specifications for specific submittals required under those sections and for further details and descriptions of requirements.

C. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports.
5. Division 1 Section "Closeout Procedures" for submitting warranties.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
9. Other Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Processing: All costs for electronic submittal, printing, preparing, packaging, mailing, or delivering submittals for initial submittals and all costs for re-printing, re-drawing, re-drafting, re-packaging, re-submitting, and re-mailing or re-delivering as required for all re-submittals shall be included in Contract Sum.

B. Sequence: Transmit each submittal in sequence which will not result in Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

E. Multiple Reviews: The Contractor shall also be responsible for all costs to Architect or Architect consultants for reviews requiring more than 2 reviews for same specification section.

F. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Review: Allow 21 days for review of each submittal. Architect will request for more time if needed.

G. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked "Approved" or "Furnish as Noted".

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating approval by Architect.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
   1. Submit request using attached form at end of section.
      a. Indicate date, project name, contractor name, address, and specific drawing (sheet number) required.
      b. Signed by Contractor agreeing with terms and conditions.

PART 2 - PRODUCTS

2.1 ELECTRONIC SUBMITTALS

A. General: Prepare and submit Submittals required by individual Specification Sections.
   1. Submit electronic submittals directly to extranet specifically established for Project.
   2. Vendor:
      a. Submittal Exchange (Basis of Design)
      b. Or equal.
   3. Contractor shall pay for all-inclusive use of Submittal Exchange by all project team members; data storage, security, and backup; setup, training, and support; and archiving once construction is complete.
      a. Documentation processed, housed and archived shall include but not limited to: Submittals, Addendum, Plans, Specs, Field Reports, Photos, Weekly Reports, Notice of deviations, Punch List, RFI's RFP's ASI's, CCD's, Cost Proposals, Test Reports, Meeting Notes., and Close Out.

2.2 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
      a. Circle items applicable.
      b. Cross-out items not applicable.
      c. Select item number if required.
   3. Submittal data must include complete documentation relating to all the specified features
   4. Include the following information, as applicable:
      a. Manufacturer's Submittal Form with all the options selected when available.
      b. Manufacturer's written recommendations.
      c. Manufacturer's product specifications.
      d. Manufacturer's installation instructions.
      e. Standard color charts.
      f. Manufacturer's catalog cuts.
      g. Wiring diagrams showing factory-installed wiring.

h. Printed performance curves.
i. Operational range diagrams.
j. Mill reports.
k. Standard product operation and maintenance manuals.
l. Compliance with specified referenced standards.
m. Testing by recognized testing agency.
n. Application of testing agency labels and seals.
o. Notation of coordination requirements.

5. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Do not use words "by others." Identify exactly who is responsible for the work.
   c. Identification of products.
   d. Fabrication and installation drawings.
   e. Roughing-in and setting diagrams.
   f. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   g. Shopwork manufacturing instructions.
   h. Templates and patterns.
   i. Schedules.
   j. Design calculations.
   k. Compliance with specified standards.
   l. Notation of coordination requirements.
   m. Notation of dimensions established by field measurement.
   n. Relationship to adjoining construction clearly indicated.
   o. Seal and signature of professional engineer if specified.
   p. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit 4 sets of prints and one electronic copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.

F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.3 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be

signed by an officer or other individual authorized to sign documents on behalf of that entity.

2. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

2.4 DEFERRED APPROVALS AND DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit 3 copies of a statement, signed and sealed by Structural Engineer Licensed in California, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
   1. Coordinate the work; do not delegate responsibility for coordination to any subcontractor.
   2. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
   3. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections.
   4. Trade submittals with “By Others”, “By General Contractor”, or similar coordination and work scope are not allowed. Identify, acknowledge, and resolve scope of work prior to submittal by Contractor. No extras will be allowed. Provide complete and coordinated submittals.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

F. Architect's and Consultant's review shall neither be construed as complete check nor relieve the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission as specified.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Electronic Files Transfer - Architectural Form.

END OF SECTION 013300

Subject: Architectural Electronic Files

Date: _____

Contractor Name: _____

Address: _____

Project: _____

At your request, we will provide electronic files for your convenience and use in the preparation of shop drawings related to _____, subject to the following terms and conditions:

Our electronic files are compatible with AutoCAD. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in the preparation of shop drawings for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub consultants that may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and/or involvement from each electronic display.

We will furnish you electronic files of the following architectural drawings: _____.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

If these terms are acceptable to you, please sign in the space provided below as evidence of our mutual understanding and agreement for this service. One signed copy of this agreement shall be returned to our office prior to delivery of the electronic files.

Very truly yours,

Architect

_____ _____

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:
   1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
   2. Other Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups:

1. Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
2. Comprehensive, completely integrated mockups of separate trades showing interface conditions, transitions, and relationships between materials and finishes.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A licensed professional engineer who is legally qualified to practice in California and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An DSA approved NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

A. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

D. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

E. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes list of references.

1.3 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. “AHJ”: Agency having jurisdiction.

C. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

D. “Compatible”: When used for products, it shall comply with requirements including products recommended/ required by the manufacturer for warrantee acceptance.

E. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

I. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

J. “Owner”: As defined in Division 1 section “Summary”.

K. "Provide": Furnish and install, complete and ready for the intended use.

L. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
   2. Copies of standards and applicable building codes (Title 24 Parts 1-5) shall be kept on-site during construction.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations.

E. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

F. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

G. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized names.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include the following:
1. Division 1 Section "Summary" for limitations on utility interruptions and other work restrictions.
2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 1 Section "Execution Requirements" for progress cleaning requirements.
4. Other Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service:
1. Owner's existing sewer system is available for use without metering but will be billed to Contractor for use charges.

C. Water Service:
1. Water from Owner's existing water system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

D. Electric Power Service:

1. Electric power from Owner's existing system is available for use without metering but will be billed to Contractor for use charges. Provide connections and extensions of services as required for construction operations.

E. Sanitary Facilities:
1. Pay sanitary service use charge for temporary toilets, wash facilities, and drinking water for use of construction personnel.

1.5 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with 2019 CEC.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized steel bases for supporting posts.

B. Wind Screen Fabric: Green.

2.2 TEMPORARY FIELD OFFICES

A. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading located within construction area or within 30 feet of building lines. Comply with NFPA 241.

B. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

C. Sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices and pay for services for following:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack board.
   3. Drinking water and private toilet.
   4. Coffee machine and supplies.
   5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
   6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
   7. Internet access:
      a. DSL or Cable (if available) service separate from the dedicated telephone line to field office and Inspector's/Architect's field office at time of project mobilization. Provide high speed connection, maintain and pay for usage.
      b. Internet access shall be through wireless WiFi router, 100 Mbps minimum.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, electric, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
   1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Install temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Install temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Install temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Install electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Install temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

A. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

B. Parking: Provide temporary or use designated areas of Owner's existing parking areas if approved for construction personnel.

C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

D. Project Identification and Temporary Signs: Provide Project identification. Install signs where directed to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.
   3. Provide a 4'-0" x 8'-0" project sign constructed of 1/2 inch plywood or 10 mil corrugated mounted to 4"x4" posts 8'-0" long set 2'-0" deep into earth.
   4. Project sign shall include a graphic of the building (available from the Architect), Architect, Consultants, District, project, funding members with titles, and Contractor with contact information for the contractor. Text and layout shall be submitted for approval prior to installation.
   5. Location of project sign shall be coordinated with District's representative.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

F. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 1 Section "Summary."

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
   1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or as indicated on Drawings.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

F. Install full coverage with green wind screen fabric to block viewing through construction fencing. Wind screen fabric shall be anchored or weighted sufficiently to resist design wind loads indicated on Drawings.

G. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Construct dustproof partitions with 2 layers of 3-mil polyethylene sheet on each side. Cover floor with 2 layers of 3-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
   3. Insulate partitions to provide noise protection to occupied areas.
   4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
   5. Protect air-handling equipment.
   6. Weather strip openings.
   7. Provide walk-off mats at each entrance through temporary partition.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses.
   1. Prohibit smoking in construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and product substitutions.

B. Related Sections include the following:
   1. Division 1 Section "References" for applicable industry standards for products specified.
   2. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Other Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Proposed products by manufacturers not listed in Manufacturers list.

C. Basis-of-Design: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating “or equal” products of other named manufacturers.

D. District Standard: Where a specific manufacturer's product is named and accompanied by the words "District Standard," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics pre-selected by the District.
   1. District seeks to match products currently in use on other campuses; No substitution allowed.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
   1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
   2. Form: Tabulate information for each product under the following column headings:
      a. Specification Section number and title.
      b. Generic name used in the Contract Documents.
      c. Proprietary name, model number, and similar designations.
      d. Manufacturer's name and address.
      e. Supplier's name and address.
      f. Installer's name and address.
      g. Projected delivery date or time span of delivery period.
      h. Identification of items that require early submittal approval for scheduled delivery date.
   3. Completed List: Submit 3 copies of completed product list within days specified in General Conditions. Include a written explanation for omissions of data and for variations from Contract requirements.
   4. Architect's Action: Architect will respond in writing to Contractor within 21 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use form provided at end of Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, environmental, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: Architect will notify Contractor of acceptance or rejection of proposed substitution within 21 days of receipt of request.
   a. Form of Acceptance: Change Order.
   b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. All substitutions affecting the Structural, Access or Fire-Life Safety portions of the project shall be submitted to DSA for approval as a Construction Change Directive in accordance with DSA IR A-6 Construction Change Document Submittal and Approval Process (Title 24, Part 1, California Code or Regulations, Section 4-338) requirements.

D. The cost for any additional design or engineering required to gain DSA approval of a substitution shall be borne solely by the contractor. Any delay impacts resulting from DSA review and approval of substitutions shall be borne solely by the contractor.

E. Named Product and Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

F. District Standard Products Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Changes to the approved drawings and specifications shall be made by an addendum or a Construction Change Document approved by the Division of the State Architect, as required by Section 4-338, Part 1, Title 24, CCR.

B. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
   3. Refer to other sections for specific content requirements and particular requirements for submitting special warranties.

C. Warranty Period: Warranty period specified in each sections are minimum requirements. Do not modify manufacturer’s standard warranty period if the manufacturer’s warranty has longer warranty period.

D. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
   6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
   3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
   5. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or an equal product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with “or equal”.

6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Product Substitutions" Article to obtain approval by Architect for use of an unnamed product.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
   a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include custom or premium items.
   b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes standard, custom, and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 35 days after the Notice to Proceed**.** Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   2. Requested substitution does not require extensive revisions to the Contract Documents.
   3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   4. Substitution request is fully documented and properly submitted.
   5. Requested substitution will not adversely affect Contractor's Construction Schedule.
   6. Requested substitution has received necessary approvals of authorities having jurisdiction and has paid any fees.
   7. Requested substitution is compatible with other portions of the Work.
   8. Requested substitution has been coordinated with other portions of the Work.
   9. Requested substitution provides specified warranty.
   10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

11. Furnish samples upon requested by Architect.
12. Attached Request for Substitution Form shall used for substitution requests.

C. Substitutions for products or systems involving structural, fire/life safety and access compliance will be considered a Construction Change Document or Addendum, and will require DSA approval. This will add time required to review those substitutions requiring DSA approval. Contractor is solely responsible for all documentation and time required to obtain DSA approval.
   1. The use of a product other than specified or noted on the Drawings will require the Contractor to get Engineer, Architect and DSA approval.
   2. The Contractor shall be responsible to provide any information, calculations or drawings to show compliance with the DSA approved drawings and provide all documentation to the Architect and/or Engineer of record.
   3. Any changes or "substitutions" that impact or relate to DSA requirements for structural, ADA or fire and life safety MUST be approved by DSA prior to proceeding with the work.
   4. The Contractor shall also be responsible for all costs to the DSA, Architect or Architect consultants for review, co-ordination, and approval by the DSA.
      a. All costs for submittal to DSA and Architect/ design team expenses shall be back charged to the Contractor.

PART 3 - EXECUTION

3.1 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Product List Form.
   2. Similar Installation List Form.
   3. Substitution Request Form.

END OF SECTION 016000

SUBSTITUTION REQUEST FORM

Substitutions are only allowed within number of days specified. Use this for m for requesting "or equal" products and materials.

Project:	Substitution Request Number:
	From:
To:	Date:
	Project Number:

Specification Section Title:		
Section Number:	Page:	Article/Paragraph:
Specified Item:		

Proposed Substitution:	
Manufacturer:	Address:
Contact Name:	Phone Number:
☐ Comparison between proposed substitution and specified product is attached. Note all differences.	

Reason for not using specified item:
☐ Specified product is no longer available.
☐ Substitution will improve lead time by _____ days
☐ Substitution will save Owner $ _____
☐ Other:

☐ List 3 similar installations including project name, address, owner, and date installed is attached.
Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explanation attached.

Supporting Data Attached:
☐ Product Data (indicate any options to be included)
☐ Drawings ☐ Test Reports ☐ Samples ☐ Color Chart ☐ Other:

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will not affect or delay Construction Progress Schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

- Substitutions for products or systems involving structural, fire/life safety and access compliance will require AHJ approval. This will add time required to review those substitutions requiring AHJ approval. Contractor is solely responsible for all documentation, cost, and time required to obtain AHJ approval.

Submitted by:	Firm:
Signature:	Date:
Comments:	

A/E Review:
☐ Approve Substitution.
☐ Approve Substitution as Noted.
☐ Reject Substitution. Use specified product.
☐ Reject Substitution. Use specified product. Substitution request received too late.

Signed by:	Date:
Comments:	

Owner's Review and Action (Approval of substitution is not valid without Owner's signature)
☐ Substitution approved.
☐ Substitution approved as Noted.
☐ Substitution rejected. Use specified product.

Signed by:	Date:

Comments:

End of Substitution Request Form

PRODUCT LIST FORM

☐ Preliminary Product List.
☐ Complete Product List.
Include a written explanation for omissions of data and for variations from Contract requirements.

Project: ______________________________ From: ____

To: ______________________________ Date: ____

Spec Section		**Early approval?** ☐ **Yes** ☐ **No**	**Product**	**Model No.**	**Manufacturer**	**Supplier**	**Installer**	**Delivery Date**
No.	**Title**							

End of Product List Form

SIMILAR INSTALLATION LIST FORM

Provide minimum 5 similar installations within last 3 years.

Project: _____ From: _____

To: _____ Date: _____

	Date of Installation	Project Name	Owner Info	GC Info	Architect info
1					
2					
3					
4					
5					
6					
7					
8					

End of Similar Installation List Form

SECTION 017300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Progress cleaning.
   3. Starting and adjusting.
   4. Protection of installed construction.
   5. Correction of the Work.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
   2. Division 1 Section "Submittal Procedures" for submitting surveys.
   3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Provide protection against weather, rain, wind, storms, frost and heat so as to maintain all work and materials free from injury or damage.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.

1.5 QUALITY ASSURANCE

A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. IOR's Inspection procedures.
   2. Warranties.
   3. Extra Materials.
   4. Final cleaning.
   5. DSA project closeout and Final Certification of Construction.

B. Related Sections include the following:
   1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
   2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
   3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   5. Division 1 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
   6. Other Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 DEFINITIONS

A. IOR: Inspector of Record.

B. Inspection: IOR will inspect, not the Architect.

1.4 SUBMITTALS

A. Submit a copy of Title 24 Certificate of Acceptance forms submitted to enforcement agency.

1.5 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting IOR's inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. IOR's Inspection: Submit a written request for IOR's inspection for Substantial Completion. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after IOR's inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.6 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final IOR's inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
   2. Submit certified copy of Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. IOR's Inspection: Submit a written request for final IOR's inspection process for acceptance. On receipt of request, Architect will either proceed with IOR's inspection process or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after IOR's inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use form attached.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date specified in General Conditions.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Include Table of Contents.
   3. Identify content with specification section number and title.
   4. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

5. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

1.9 EXTRA MATERIALS

A. Deliver to Owner's facility manager extra materials specified in each section.

B. Organize submitted materials in orderly sequence based on the table of contents of the Project Manual.
   1. Itemize each material and quantity in 8-1/2 by 11-inch paper.

C. Label each items for easy identification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting IOR's inspection for certification of Substantial Completion for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

3.2 DSA PROJECT CLOSEOUT AND FINAL CERTIFICATION OF CONSTRUCTION

A. Verified Reports: Per Title 24 Part1, Section 4-336.

B. Final Certificate of Construction: Per Title 24 Part1, Section 4-339.

C. Duties of Contractor: Per Title 24 Part1, Section 4-343.

3.3 FORMS

A. Electronic versions of attached forms will be provided upon request.
    1. Punch-List Form.

END OF SECTION 017700

PUNCH-LIST FORM

☐ Preliminary Punch-List.
☐ Final Punch-List.

Project:	From:
To:	Date:

Item No.	Room No.	Area	Description	Completion Date	A/E Verification

End of Punch-List Form

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Maintenance manuals for the care and maintenance of products, materials, and finishes.

B. Related Sections include the following:
   1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
   3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
   4. Other Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return 1 copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit 1 copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.

3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
   1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
   4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
   5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   3. Gas leak.
   4. Water leak.
   5. Power failure.
   6. Water outage.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions.
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard printed maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.

B. Related Sections include the following:
   1. Division 1 Section "Closeout Procedures" for general closeout procedures.
   2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Other Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit 1 set of marked-up Record Prints.

B. Record Specifications: Submit 1 copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit 1 copy of each Product Data submittal.
   1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Identification: As follows:
      a. Project name.
      b. Date.
      c. Designation "PROJECT RECORD DRAWINGS."
      d. Name of Architect.
      e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
   4. Assemble in single binder with table of contents.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

3.2 FORMS

A. Electronic versions of attached forms will be provided upon request.
   1. Record Product Data Form.

END OF SECTION 017839

RECORD PRODUCT DATA FORM

Record Product Data is due no later than 10 calendar days after the date of Substantial Completion. Photocopy for continuation sheets. List products in order by specification section numbers.

Project Name:	From:
To:	Date:

Spec Section		**Originally Specified**		**Actually Installed**	
No.	**Title**	**Model**	**Manufacturer**	**Model**	**Manufacturer**

End of Record Product Data Form

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:
   1. Division 1 Section "Project Management and Coordination" for requirements for preinstruction conferences.
   2. Other Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

A. Instruction Program: Submit 2 copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. At completion of training, submit 1 complete training manual(s) for Owner's use.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written performance-based test.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

DIVISION 2

SITE CONSTRUCTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Qualification Data: For demolition firm.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
   6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Storage or sale of removed items or materials on-site is not permitted.

B. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated. Patch and repair with similar materials.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts. Patch and repair with similar materials.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
1. Patch and repair with similar materials.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Division 1 Section "Construction Waste Management."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

DIVISION 5

METALS

SECTION 051200

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Furnish and Installation of structural framing members, complete in place with required bracing, weld washers, nuts, shims, anchor bolts, and baseplates as indicated on the Drawings and specified herein.

B. Related Sections: Metal Fabrications; refer to Section 055000.

1.2 REFERENCE STANDARDS

A. Refer to the following for information regarding materials and installation methods necessary:

1. California Building Code (CBC) 2019, Chapters 22A and 35, as adopted by Title 24, and Chapter 7, Section 704 Fire-Resistance Ratings of Structural Members.

a. Refer to Drawings for details, design numbers, and ratings.

2. On-Site Welding Requirements, Sections 2204A, 1704A and 1705A, Title 24, Part 2, California Building Code, 2019.

3. American Society for Testing and Materials: Specifications A36, A123, A307, A370, A500, A501, A572 and A992.

4. American Institute of Steel Construction (AISC).

5. American Welding Society: AWS D1.1 and AWS D1.4

6. Steel Structures Painting Council (SSPC).

1.3 SUBMITTALS

A. Submit Shop and Erection Drawings Prior to Fabrication: Prepare erection drawings by State registered Structural Engineer. Show welded connections, lengths of welds, profiles, sizes, spacing and locations of members, attachments, anchorages, framed openings, size and type of fasteners, cambers and live loads. Contractor shall be responsible for reviewing and verifying all dimensions on shop Drawings.

1. Splices and Deviations: Splices will be permitted only where and as shown on Drawings. Deviations from design drawings desired or required by fabricator are to be indicated on shop drawings by providing a heavy line around the feature on which deviation approval is being requested, showing complete detail and

describing deviation proposed. Provide detail with a note specifically requesting approval of deviation by fabricator. Deviations or changes shall not be made without the approval of the Division of the State Architect, as a Change Order.

a. Refer to Section 013300 – Submittal Procedures, Paragraph 3.4 A.2. (Revisions) Cost of such changes shall be borne by the Contractor.

B. Erection and Bracing Plan and Procedure: Refer to Section 2205A, Title 24, Part 2, California Building Code. Employ a California State licensed Structural Engineer to prepare erection and bracing plan and erection procedure for structural steel including columns, beams, and girders, who will be responsible for compliance. Follow plan and procedure exactly. Maintain a copy at project site. Pay for costs involved.

C. Scrap collection and recycling plan: Contractor shall prepare and submit a scrap collection and recycling plan for all miscellaneous and structural steel.

1.4 QUALITY ASSURANCE

A. Tests and Inspections: Testing for steel shall be done in accordance with Title 24, Part 2, Section 1705A.2. Inspection shall be in accordance with Title 24, Part 2, Section Table 1705A.2.1.

B. If structural steel can be identified by heat or melt numbers and is accompanied by mill analysis and test reports (identified stock shall not be tested), testing shall be in accordance with Title 24, Part 2, Section 2203A.1

C. If structural steel cannot be identified or its source is questionable, make not less than one tension and one bend test for each 5 tons or fraction thereof. Also, it shall be tested to meet minimum chemical and mechanical requirements of the ASTM standard appropriate for the steel specified for the structure.

D. Furnish test specimens from steel fabricator and take them under the direction of the Testing Agency. Machine each test specimen by Testing Agency to dimensions required by ASTM A370.

E. Have testing agency pick up test specimens and make required tests.

F. Costs of tests of identified stock will be paid for by Owner, unless tests fail to comply with the specifications, in which case the Owner will pay for testing, but back charge the Contractor. Costs of tests for unidentified stock will be paid for by the contractor.

G. Complete a 4-sided inspection of steel. Such inspection shall be paid for by the Owner. The Inspector of structural steel which is not fabricated within 25 miles of the project site, shall also be paid for by the Owner, but the Contractor shall pay for travel expenses.

H. After fabrication and inspection, costs associated with re-inspection of defective or replaced materials shall be paid for by the Owner, but backcharged to the Contractor.

I. Provide labor, equipment and facilities necessary for moving and handling materials to be inspected.

J. Provide and pay for supervision by a registered Inspector of welding operations of frames with joints, including inspection for quality, penetration, and conformity of Drawings, and a report verifying that welding is adequate and was done in conformity of project requirements.

1. Visually inspect welds, and have inspector present to approve welding and high strength bolting whether performed in fabricator's shop or at project site, and inspect erection. Ensure testing laboratory compliance with regulations of the Division of the State Architect and certify in writing, upon completion of work, that welding and high strength bolting has been performed in accordance with Drawings and these Specifications. Inspect grouting of column base plates.

2. ~~Have testing laboratory check bolt tightness on not less than 10 percent of bolts selected at random in each high strength bolt connection. Follow procedures of ASTM A325 and A490.~~

3. Inspect all complete penetration welds and partial penetration welds by ultrasonic or other approved nondestructive tests. Inspect first pass of multi-pass welds and groove welds.

4. Perform ultrasonic testing by specially trained, qualified technicians who operate equipment, examine welds and maintain a record of welds examined, defects found and disposition of each defect. Repair defective welds and retest.

5. Ultrasonically test welds at rate of 100 percent to establish welder qualifications. If rejectable defect rate is less than 5 percent, frequency may be reduced to 25 percent. If rate increases above 5 percent, continue 100 percent testing until rejectable defect rate again drops below 5 percent. Calculate percentages by individual welder.

6. Submit all preliminary, working and final documents required by subsection 1.04K.

7. Inspect all seam welds at HSS steel member.

K. Comply with California Building Code (CBC) Title 24, Part 2, Sections 2213A and 1705A.2.

L. Results of tests, together with identified copies of the Mill Analysis and inspection reports shall be submitted to the Division of the State Architect, and to the Architect and Structural Engineer. Arrange for continuous inspection of Shop and field welding in accordance with Title 24, Part 2 Section 1705A.2.2.1 and Table 1705A.2.

1.5 PROJECT CONDITIONS

A. Verify measurements, lines, grades, locations and details at project site. Conform to existing field conditions.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. Structural Steel Members: Shall conform to the requirements of ASTM A6, add the following sentence "and shall be fabricated according to AISC Practice and Specifications for Building."

B. Structural plates, bars, etc., shall conform to ASTM A36 and ASTM A572. Structural wide flange beams and columns shall conform to ASTM A992, Grade 50.

C. Pipe columns shall conform to ASTM A53, Grade B

D. Tube members shall conform to ASTM A500, Grade B.

E. All welding shall be done using the shielded electric arc process by AWS certified welders using AWS A5.1, E70XX electrodes.

F. All welds used in primary members and connections in the lateral force systems shall be made with a filler metal that has a minimum Charpy V-notch toughness of 20 ft.-lbs. at minus 20 degrees F., as determined by AWS classification.

G. Continuous inspection is required for all field and shop welding by an Inspector approved by the Division of the State Architect.

H. Bolts shall conform to ASTM A307, unless noted otherwise.

I. Structural Steel Shop Drawings shall be reviewed by the Structural Engineer prior to fabrication.

J. Light gauge steel members shall conform to ASTM A653, Grade A.

K. Recycled Content – Provide products with an average recycled content of steel so postconsumer recycled content plus one-half of postconsumer content is not less than 50%

2.2 LIGHT STRUCTURAL STEEL

A. Standard specifications for Hot-Formed Welded and seamless Carbon Steel Structural Tubing, ASTM A500 Grade B.

2.3 WELDING ELECTRODES

A. Conform to AWS, D1.1/D1.1M-15.

1. Required strength of weld shall comply with CBC Title 24, Part 2, Sections 2212A.2.3 and 2213A.

2.4 GALVANIZING

Galvanize all structural steel exposed to weather, unless otherwise noted on plans.

A. Provide hot-dip galvanizing in accordance with ASTM A123, Grade 90.

B. Field Galvanizing: Provide ZRC, or other approved.

2.5 PRIMER

A. Exterior Primer - Provide Tnemec Series 10, a zinc-chromate, or other approved. Primer shall have a VOC content of 100 g/l (0.83 lb/gal) or less when calculated according to 40 CRF 59, Subpart D (EPA method 24).

B. Interior Primer – Provide interior primer 734149X red oxide by Rodda Paint Co., or equal. Primer shall have a VOC content of 100 g/l (0.83 lb/gal) or less when calculated according to 40 CRF 59, Subpart D (EPA method 24).

C. Clean, prepare and shop prime exterior members in accordance with SSPC-Paint 20 or SSPC-Paint 29 and compatible with top coats indicated on plans. Do not prime specific surfaces to be welded or which will be in direct contact with concrete or other cementitious materials.

D. Clean, prepare and shop prime interior members in accordance with SSPC-Paint 23 and compatible with top coats indicated on plans. Do not prime specific surfaces to be welded or which will be in direct contact with concrete or other cementitious materials.

2.6 WELDED STUDS

A. All welded studs shall be Nelson shear connector studs (ICC ESR-2856) or equal.

B. See Drawings for welded stud locations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Surface Conditions: Prior to commencing work of this section, inspect the work of others and verify that such work has been properly completed and installed to allow for proper installation of materials and methods required of this section.

3.2 FABRICATION AND ERECTION

A. Fabricate and assemble work by skilled workers using sizes and weights shown. Connections are to develop at least strengths shown, unless approved otherwise beforehand. Allow no splices except where shown.

1. Ultrasonic material inspection - ultrasonically test column materials thicker that

1-1/2 inch for laminations within 1 foot (6 inches either side) of a direct groove weld from girder flange connections and column splices.

B. Drilling, Punching and Reaming: Hole burning to make or enlarge previous holes is not allowed. Prepare required holes in structural steel members for attachment or passage of work of other trades. Where allowed, steel may be punched 1/16-inch larger than the nominal diameter of the bolt when thickness of the steel is equal to or less than the diameter of the bolt plus 1/8-inch. Where the steel is thicker than the diameter of the bolt plus 1/8-inch, the holes must be drilled or sub-punched and reamed. Diameter of the sub-punched holes, and the drill for sub-drilled holes, is to be 1/16-inch smaller than the nominal diameter of bolt to be installed. Precisely locate finished holes to ensure passage of bolts through steel assemblies without drifting. Enlarge holes only by reaming. Poor matching of holes is cause for rejection of work.

C. Welding: Comply with the requirements of Title 24, Part 2, Sections 1705A.2 and 2204A.1. Perform welding by the electric shielded arc process. Cut out defective welds with a chisel. Clamp or hold materials securely in position for welding. Upon completion, remove slag and clean welds for inspections and painting. Groove and multi-pass welds are required to be continuously inspected.

1. Storage and Care of Electrodes: Ensure that coatings of low hydrogen type electrodes are thoroughly dry when used. Use electrodes taken from hermetically sealed packages within four hours of the time the package is opened. Electrodes not used within this time period, and electrodes which have been exposed more than one hour to air having a relative humidity of 75 percent or greater, are to be dried for at least two (2) hours at 200 to 250 degrees F. before used, or are to be reconditioned according to manufacturer's printed recommendations. Electrodes dried or reconditioned, which are not used within four hours after drying is completed, are to be re-dried before use. Electrodes of any classifications that have been wet are not to be used under any conditions.

2. Preparation: Clean surfaces to be welded of paint, grease, scale, and foreign matter. Clean welds each time electrode is changed. Chip entire area of hand guided and controlled flame cut edges before welds are deposited. In general, surfaces made by automatic or mechanically guided and controlled equipment need not be ground or chipped before welded.

3. Procedures: During assembling and welding, hold components of a built-up member with sufficient clamps or other adequate means to keep parts straight and in close contact. Do no welding in wind until adequate protective screening has been set up.

4. Characteristics of Welds: After being deposited, brush welds and ensure they exhibit uniform section, smoothness of weld metal, feather edges without undercuts or overlays, and freedom from porosity and clinkers. Ensure through visual inspection at edges and ends of fillet welds there is good fusion and penetration into base metal.

D. Bolting:

1. Common Bolts: Make connections with common bolts only where indicated.

2. ~~High Strength Steel Bolting: Where structural joints are made using high strength bolts, load indicator washers, and nuts tightened to a high tension, the materials, method of installation and tension control, types of wrenches to be used, and inspection methods are to conform to specifications for structural jointing using ASTM A325 or A490 bolts established by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation and the following requirements:~~

   a. ~~Provide high strength bolts with a suitable identifying mark placed on top of the head before leaving factory.~~

   b. ~~Do tightening of nuts with properly calibrated wrenches, load indicator washers, or turn of nut method; the minimum bolt tension for the size of bolt used is to be in accordance with tables listed in the above standards.~~

   c. ~~Check calibrated wrenches individually for accuracy at least twice daily for actual conditions of application.~~

   d. ~~Mark bolts that have been completely tightened with identifying symbol.~~

   e. ~~Install load indicator washers in accordance with AISC specifications and Contract Drawings.~~

   f. ~~Ensure that contact bearing surfaces and threads of bolted parts are free of scale, slag, and burrs which could prevent solid seating of parts.~~

   g. ~~Bolt lengths are to be grip plus 1-1/4 inch.~~

   h. ~~At moment connections perform welding prior to high-strength bolt tightening~~.

3. Load Indicator Washers: Provide as manufactured/ licensed by Cooper and Turner. They may be used for field installation of high-strength bolts. These washers may not be substituted for any required washer, but may be used in conjunction with required washers. Tightening is to be in accordance with these specifications using high strength bolts. After sufficient bolts in a joint are snugged to draw the members into close contact, tightening should progress from the most rigid part to the free edges until the load indicators on bolts are closed to the required gap of 0.015 inches under bolt heads or 0.010 inches under the nuts. To prevent overtightening and damage to the bolts, do not completely close the gap.

4. Tension Set Bolts, Nuts, and Washers: May be used for field installation of high strength bolts. In multi-bolt joints, tighten nuts in stages, a little at a time, without breaking the spline in any one of them until the final stage, to minimize

slackening of the installed bolts.

5. Inspection of high strength bolting shall comply with Title 24, Part 2, Sections 2213A.1 and 1705A.2.

6. Erector to touch-up all welds and bolts after inspection.

E. Erection:

1. Erect structural steel by professional riggers, using proper hoists and equipment, carefully planned and laid out so that cutting shall not be necessary. Erect the work plumb, square and true to line. Provide temporary bracing and guys where necessary to provide for loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation, and leave in place as long as necessary to safeguard parts of the work.

2. Temporary Connections: Securely bolt work to maintain the steel in proper position while bolting and welding is being performed. Align, plumb and level work prior to welding and final bolting.

3. Set column base plates in exact position as to alignment, level and elevation and support on steel wedges or equivalent until grout has properly set. Center of each base is to be true to the column center within 1/16-inch and adjusted to its elevation to 1/32-inch. Exactly level plates on both axes.

4. Sequence: Carry out the erection of steel in the proper sequence with the work of others. Frame, bed and anchor to concrete and related work in accordance with detailed drawings and setting diagrams.

5. Erection Tolerance: Follow AISC except as follows:

a. Vertical dimensions measured from top of beams at their connections at any one column, not varying more than 1/4-inch plus or minus per story or, when accumulative from floor to floor, not exceeding 3/8-inch per story exclusive of column shortening due to dead load.

b. Floor level is considered level if floor framing members on any one floor measured from top of column connections do not vary by more than 1-1/2 inch plus or minus.

c. Plumb displacement center line of columns from established column line, no more than 1 inch toward or away from established center line.

d. Horizontal dimension variances governed by column displacement.

6. Perform erection with suitable equipment, of adequate capacity and design with due regard for personnel and public safety and as not to deflect or stress members

beyond reasonable limits. Maintain erection and temporary bracing plan at project site in accordance with Title 8, California Code of Regulations.

7. Damaged members during erection: Straighten or replace members which are bent, twisted or damaged as directed. If heating is required in straightening, perform heating by methods which ensure uniform temperatures throughout entire member. When directed, remove members which are damaged to an extent impairing their appearance, strength or serviceability and replace with new members at no additional cost to Owner.

8. Anchor Bolts: Provide with setting drawings and instructions. Verify position of bolts prior to delivery of steel; report errors or deviations for adjustment.

F. Erection Bracing: Provide erection bracing immediately upon erection of members and leave in place until members are braced by balance of building.

3.3 PROTECTION

A. Protection of Floors and Temporary Flooring:

1. Exercise caution to protect floor surfaces and adjacent work from damages. Do not overload floors. Provide only pneumatic mobile equipment with tires, for moving steel. Do not place steel members directly on concrete floors. Pads, timbers, or other materials for cushioning shall be used.

2. Provide necessary planking, scaffolding and temporary flooring in connection with erection of steel or support of erection machinery as part of the work. Conform use of temporary floors or steel deck to governing codes and regulations.

3. Temporarily tack weld steel deck to supports where used as a working platform. Distribute concentrated loads from welding machines or other heavy machinery by planking or other equivalent means. Replace steel deck damaged in using as working platform at no additional cost to Owner.

3.4 CLEANING

A. Shop Priming:

1. Clean surfaces according to SSPC and AISC recommendations, and apply specified primer to minimum 1.0 dry mil thickness. Ensure that primer is worked into joints.

2. Steel to be embedded into cementitious materials, permanently concealed steel surfaces, contact surfaces of high-strength bolted connections, and surfaces to receive fireproofing are not to be primed.

END OF SECTION

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   2. Miscellaneous framing supports.
   3. Miscellaneous steel trim.

B. Related Sections include the following:
   1. Division 9 Section “Painting” for field painting.

1.3 DEFINITIONS

A. Exterior: Defined as the following:
   1. Areas, locations, and surfaces that are unprotected, or exposed to environmental elements.
   2. Areas, locations and surfaces within uncontrolled environments.
   3. Areas, locations and surfaces of unconditioned spaces, including belowgrade/underground, partially-exposed, or “covered” parking areas.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.5 SUBMITTALS

A. Product Data: For items specified.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.

1.6 QUALITY ASSURANCE

A. Treads, Risers, and Nosings: CBC Section 11B-504.
   1. Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast.
   2. The stripe providing clear visual contrast shall be a minimum of 2” wide to a maximum of 4” wide placed parallel to, and not more than 1” from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.
   3. The radius of curvature at the leading edge of the tread shall be no greater than ½”. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. The maximum angle for a riser to slope under the tread shall be 30 degrees from vertical. Nosings shall extend 1-1/4" maximum over the tread below.
   4. Treads shall be 11” deep minimum. Risers shall be 7” high maximum and 4” high minimum. All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Open risers are not permitted.

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal fabrications that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Provide products with average recycled content of steel products such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

D. Steel Tubing: ASTM A 500, cold-formed steel tubing.

E. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

F. Slotted Channel Framing: Cold-formed metal channels with continuous slot complying with MFMA-3.
   1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated.
   2. Material: Galvanized steel complying with ASTM A 653, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36.
   1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.
   1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Surface Preparation: SSPC-SP2 Hand Tool Clean and /or SSPC-SP3 Power Tool Clean.

D. Organic Zinc-Rich Primer: Complying with SSPC-Paint 20 and compatible with topcoat, and meets AISC slip coefficient as a Class B Coating.
   1. Surface Preparation: SSPC-SP6 Commercial Blast Clean.
   2. Products:
      a. Tnemec Company, Inc.; Tneme-Zinc 90-97, 2.5 to 3.5 mils DFT (Basis of Design)
      b. Other manufacturers listed in Division 9 Section "High Performance Coatings".
      c. Or equal.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
   1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as indicated. Drill bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Galvanize miscellaneous framing and supports where indicated.

E. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.8 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

C. Field painted exterior miscellaneous steel trim and interior miscellaneous steel trim, where indicated.

2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
1. ASTM A 123, for galvanizing steel and iron products.
2. ASTM A 153, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

D. Field Finish: Comply with Division 9 Section “Painting” for field painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for sectional doors securely to and rigidly brace from building structure.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

DIVISION 6
WOOD AND PLASTICS

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Wood framing, miscellaneous furring for wall finishes, miscellaneous blocking and rough hardware.

B. Related Sections:

1. Finish Hardware, see Section 087100 – Door Hardware.
2. Millwork and other finish carpentry.

1.2 REFERENCE STANDARDS

A. Softwood Lumber: PS 20 - American Softwood Lumber Standard.

B. NFPA - National Forest Products Association, National Design Specifications for Stress Grade Lumber and its Fastening.

C. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

D. Chapter 23, Part 2, Section 2303, Title 24, California Building Code, 2019.

E. Chapters 7, 23 and 35, California Building Code, 2019.

F. Plywood: U.S. Product Standard PS 1-09.

G. Lumber: U.S. Product Standard, PS 20-10.

1.3 QUALITY ASSURANCE

A. Provide lumber with visible grade stamp of an approved agency certified by NFPA.

1.4 DELIVERY, STORING AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up, off ground surface.

B. Identify framing lumber by grades and store grades separately from each other.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading lumber to prevent damages, splitting and breaking.

E. Seasoning:

F. Deliver materials at earliest date possible to allow maximum; drying time on site.

G. Pile and strip lumber at site to allow free circulation of air with pile protected from sun and moisture.

H. Air-season lumber for at least 60 days before covering with finish materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber: PS 20 and WCLIB Standard Number 17; Douglas Fir/Larch; graded in accordance with NFPA Grading Rules; maximum moisture content of 19 percent, grades as scheduled on drawings.

1. Douglas fir shall bear WCLIB grade stamp.

2. Pressure treated Douglas fir shall be No. 2 minimum and bear the AWPA quality mark. Cuts and holes shall be treated per AWPA Standard U1 (statements such as "or to refusal" are not permitted).

3. Comply with provisions of Title 24, CBC, 2019, Part 2, Section 2303.

B. Plywood:

1. Plywood for Roofs, Walls, and Floor Sheathing: PS 1-09 Structural I grade, APA C-D, exterior glue, except B-D for electrical and telephone panels.

2. Comply with CBC, 2019, Section 2303.

3. Roof and shearwall plywood shall be nominally 4 ft. x 8ft. in size. Do not use sheets less than 8 square feet, nor less than dimensions noted in paragraph 3.08 Plywood Placement.

2.2 ACCESSORY MATERIALS

A. Nails, Spikes, and Staples: Common (with standard lengths), except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Steel Hardware and Stock Framing Products by Connectors: ASTM A36 steel, galvanized for exterior applications, Simpson Strong-Tie Company. Products by KC Metal Products, or other approved manufacturer, may be substituted if equal. Comply with CBC, 2019, Title 24, Part 2, Chapter 23.

C. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

D. Wood Preservative: Wolmanizing treatment at least two weeks prior to delivery to site. Treatment shall meet or exceed AWPA P5.

E. Machine Bolts: ASTM A307.

F. Pressure Treatment: Sills and plates in contact with concrete or masonry within 48 inches of the ground, and wood posts and columns bearing directly on concrete shall be water-borne preservative pressure treated in accordance with paragraph, CBC 2019, Title 24, Part 2, Chapter 23.

1. At cuts, holes, notches and other field operations which expose a surface not factory treated with preservative, field apply preservative material compatible with original material shall bear mark AWPA Standard U1.

2. Meet local Air Quality Control Board Standards for field applied preservative treatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Selection of Lumber: Carefully select members. Ensure that exposed members are free of heart center. Select members so that knots and obvious defects will not interfere with placement of bolts, proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

B. Cut out and discard defects which will render a piece unable to serve its intended function. Lumber may be rejected by Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.

3.2 GENERAL FRAMING

A. In addition to framing operations normal to fabrication and erection indicated on drawings, install wood backing required for work of other trades, and for casework, chalkboards, toilet partitions and etc. as required. Wood backing to be installed in high traffic and high impact areas.

B. Set horizontal and sloped members with crown up.

C. Non-bearing stud walls, sills, and trimmers may be anchored to concrete per Structural Drawings.

D. Wall and partition studs and mullions shall be continuous from sill to plates. Run at least two studs on each side of openings in stud walls for openings in exterior walls and in partition openings larger than 5 feet, and partitions from sill to plate. In addition, place one stud trimmer to support each end of lintels over openings, unless shown otherwise.

E. Provide double plates with joints staggered and lapping at least four feet, and splice. Nail as required on Drawings.

F. Install nailing blocks and backing necessary for attachment of grounds, finishes, trim, fixtures, and do required cutting, furring, and backing for plumbing and heating pipes,

fixtures, etc., as detailed in the Drawings or approved by the Structural Engineer and approved by the Division of the State Architect, Office of Regulations Services.

G. Frame stud partitions, furring and walls containing fire extinguisher cabinets, electric panels, plumbing, heating, or other pipes to give proper clearance. Cutting of studs in bearing partitions and shear walls is prohibited unless specifically detailed.

H. Do not place pipes exceeding 1/3 of plate width in partitions used as bearing or plywood-sheathed walls, but place them in furring completely clear of studs, unless detailed otherwise. Place approved piping in center of plates using neat hole. No notching is allowed. In no case allow pipes to pass through plates less than 5-1/2 inches wide.

I. Unless otherwise indicated provide 2 inch by 6 inch studs at 16-inches on centers. Refer to Structural Drawings for Simpson Metal Strap Ties, strap length, nail size and nail spacing where plates are broken.

J. Provide cross-bridging at 10 feet on centers maximum for all joists and rafters more than 10-inches deep. Use wood 2 inch by full depth of joist or rafter or approved metal type bridging. Nail metal bridging.

K. Provide isolated posts with connections at top and bottom; Simpson CC caps or CB base unless specifically detailed otherwise.

L. Double joists under parallel partitions with solid blocking between joists over points of support.

M. Provide a Simpson "CB" Steel Base Plate for untreated wood posts where they are or will be in contact with concrete.

N. Framing for horizontal plaster assemblies shall comply with the requirements of CBC 2019, Title 24, Part 2, Section 2507.

3.3 FIRE BLOCKING

A. Fire blocking shall conform with the requirements of CBC 2019, Title 24, Part 2, Chapter 7, Section 713.

B. Ensure that no fire stop is less than nominal 2 inches thick and no less in width than enclosed space within partition.

C. Provide stud wall and partitions with continuous rows of bridging or fire stops which will form a complete and effective separation in entire width of partitions, placed in such a manner that there will be no concealed air spaces greater than 8 feet in vertical dimension. Intermediate stops may be in line with opening headers. Provide furred space between stud walls and partitions with continuous fire stops at same elevation as those in the enclosing walls which must be installed horizontally, thus forming a solid stop from outside to outside of studs. At concealed draft passages or shafts including furring spaces, ensure that maximum dimension is no more than 8 feet. Provide fire stop partitions at suspended ceilings.

3.4 BEARINGS

A. Make bearings full unless shown otherwise.

B. Finish bearing surfaces on which structural members are to rest so as to give sure and even support. Where framing members slope, cut or notch ends as required to give uniform bearing surface.

3.5 SHIMMING

A. Do not shim framing member except where specifically shown or required by drawings.

3.6 BLOCKING

A. Install blocking required to support items of finish and to cut off concealed draft openings, both vertical and horizontal, between ceiling and floor.

3.7 ALIGNMENT

A. On framing members to receive a finished surface, align finish sub-surface to vary not more than 1/8-inch from plane of surface of adjacent framing and furring members.

3.8 PLYWOOD PLACEMENT

A. All installed plywood shall be in 4' x 8' sheets except where restricted by boundaries or changes.

B. Minimum Plywood Panel Sizes shall be as follows:

1. In horizontal plywood diaphragms, no panel less than 24 inches wide or 48 inches long shall be used.

2. In vertical plywood diaphragms, no panel less than 16 inches wide shall be used.

C. Center joints accurately over support unless otherwise shown on Drawings. Provide gapping of plywood substrate of 1/8-inch at abutting joints at all wall.

D. Protect plywood from moisture until succeeding component or materials are installed to cover plywood. Delaminating plywood shall be removed and replaced.

3.9 FASTENING

A. Use only common wire nails or spikes of standard lengths and gages as specified Table 2304.10.1, of the California Building Code, 2019.

B. For conditions not covered on drawings, Contractor to request clarification or provide penetration into piece receiving point not less than 1/2 length of the nail or spike, provided that 16d nails may be used to connect two pieces of nominal 2 inch thickness as specified by the Architect, and/or Structural Engineer and approved by the Division of the State Architect.

C. For bolts, drill holes 1/32-inch to 1/16-inch larger in diameter than bolts being used. Drill straight and true from one side only.

D. Bolt threads shall not bear on wood. Use washers under head and nut where both bear on wood. Use washers under nuts.

E. For lag-screws, and wood screws, pre-bore holes in accordance with CBC 2019, Title 24, Part 2, Chapter 23.

F. Screw, do not drive, lag screws and wood screws.

G. Nailing schedule shall be per CBC 2019, Title 24, Part 2, Chapter 23.

3.10 HOLLOW METAL FRAME GROUTING

A. At all exterior hollow metal jambs, drypack/grout the bottom 6-inch space between the hollow metal and 6-inch concrete curb at the wall. The intent is to fill solid the void between the frame and concrete curb. Install drypack/grout before any finishes are applied to the studs.

END OF SECTION

SECTION 062000

FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Handrails, chair-rails, trim, and soffits.

B. Related Sections:

1. Rough Carpentry; refer to Section 06 10 00.
2. Specialties; refer to Division 10.

1.2 REFERENCE STANDARDS

A. Woodwork Institute, 2nd Edition, 2014 Architectural Woodwork Standards, has recommendations for materials, construction, and installation procedures.

B. West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17 Grading Rules for West Coast Lumber.

1.3 QUALITY ASSURANCE

A. Provide millwork fabricated in accordance with recommendations of Woodwork Institute. Fabricated millwork shall be certified and grades stamped with Woodwork Institute certification.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and store materials at job site in a safe area, out of traffic and shored up off ground surface.

B. Do not store millwork outside. Do not deliver millwork to project until spaces or other surfaces to receive it are prepared.

C. Protect products with adequate waterproofing.

D. Exercise care in off-loading items to prevent damages, chips, splitting and breaking.

1.5 PROJECT CONDITIONS

A. Seasoning:

1. Deliver materials at earliest date possible to allow maximum drying time on site.

2. Air-season lumber for at least 60 days near job site before covering with finish materials.

1.6 SUBMITTALS

A. Provide manufacturer's standard color samples of plastic laminate (where applicable) and hardwood veneers for color and grain selection.

B. Provide Woodwork Institute Certified Compliance Certificates for millwork items, certifying that products fully comply with requirements of the grades specified.

C. Prepare Shop Drawings in accordance with Section 1 of the WI Standards referenced. Include the Woodwork Institute Certified Compliance label on the first page of each set of Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Finish Lumber: Graded in accordance with Western Wood Products Association Grading Rules; maximum moisture content of 15 percent.

ITEM	SPECIES	GRADE
Misc. Trim	Red Oak, rift cut	Custom
1 x 4 tongue and groove siding	Redwood	Grade A, square edge, random length.

2.2 ACCESSORIES

A. Nails, Spikes, and Staples: Common, except as otherwise indicated, galvanized for exterior locations, high humidity within conditioned spaces, and treated wood; plain finish for other interior locations; size and type to suit application.

B. Lag Bolts: ANSI/ASME B18.2.1 and ASME B18.18.1.

C. Machine Bolts: ASTM A307

D. Wood Preservative: Wolmanizing treatment at least two-weeks prior to delivery to site.

2.3 FABRICATION

A. Manufacture, mill, fabricate, assemble and finish millwork by skilled mechanics, using approved standard methods of manufacture and workmanship. Workmanship shall conform to the Custom Grade requirements of Woodwork Institute Manual referenced.

B. Conceal means of fastening where other than glue joinery is employed. Use fine casing nails, carefully set without hammer marks.

C. Level tops of counters and cabinetry to a tolerance of 1/32-inch in 4 feet in direction.

PART 3 - EXECUTION

3.1 PREPARATION

A. Selection of Lumber: Carefully select members so that defects will not interfere with proper nailing or making proper connections, and not impair achievement of proper finished appearances where to be exposed.

3.2 INSTALLATION

A. Installation of finish carpentry and millwork shall be in accordance with the applicable recommendations of the Woodwork Institute Manual, current edition, Architectural Woodwork Standards.

B. Install building specialty items specified under other sections which are not specified to be installed by specialty product manufacturer or supplier.

END OF SECTION

SECTION 064100 - PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes wood paneling.

1.3 SUBMITTALS

A. Product Data.

B. Shop drawings.

C. Visual samples: Submit two (minimum 4” x 6”) samples indicating color and texture to be expected in finished work.

D. Maintenance data: Give instructions for general maintenance and repair of surfaces and finishes.

1.4 QUALITY ASSURANCE

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 3 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paneling:
   1. Stikwood. (Basis of Design)
   2. Or equal.

2.2 WOOD PANELING

A. Product: Reclaimed Weathered Wood by Stikwood or equal.
   1. Description: Lightweight, real wood plank with a peel+stik adhesive tapeback.
   2. Common Name: American Eastern White Pine.
   3. Scientific Name: Pinus Strobus L.
   4. Grade: Recycled Original Weathered Patina Texture.
   5. Finish: Unfinished.
   6. Flame Spread Rating: (ASTME 84): Class A Treatment Option.
   7. Standard Milling: Flush Cut, No Tongue And Groove, Butt Joint.
   8. Installation: Peel and Stick.
   9. Certifications: Fsc® Recycled 100%, Indoor Advantage™ Gold.
   10. Indoor Air Quality Certified To Scs-Ec10.3-2014 V4.0.
   11. Typical Dimensions:
      a. Thickness: 5/32″.
      b. Width: 5″.
      c. Length(S): Random 12″–48″.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Panels are subject to the effects of humidity and temperature. Do not use in high humidity areas.

B. Open cartons and carefully inspect all panels.

3.2 INSTALLATION

A. Install all materials in strict accordance with the manufacturer’s installation instructions.

B. Avoid contamination of the panel faces with adhesives, solvents or cleaners during installation.

3.3 CLEANING

A. Clean panels, trim and hardware according to the manufacturer’s recommendations.

END OF SECTION 064100

SECTION 068200 - FIBER REINFORCED PLASTIC PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Fiber reinforced plastic panel system for adhesive mounting.
   2. Moldings, adhesive, and joint sealants.

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

C. Maintenance Instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of fiber reinforce plastic panels that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fiber Reinforced Plastic Panels: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Marlite. (Basis of Design)
   2. Formica. (Basis of Design)
   3. Nudo.
   4. Crane Composites (formerly Kemlite).
   5. Glasteel.
   6. Or equal.

2.2 PANEL SYSTEM

A. Plastic Panel System: Factory finished panels, trim, sealant, and accessories.

B. Product: Standard FRP by Marlite or equal.
   1. Fiberglass reinforced polyester, USDA approved for incidental food contact.
   2. Surface Burning Characteristics: Flame spread index of 200 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84 (Class C/III).
   3. Thickness: 3/32 inch, nominal.
   4. Width: 48 inches.
   5. Height: 96 inches.
   6. Flexural Strength: 17,000 psi, when tested in accordance with ASTM D 790.
   7. Flexural Modulus: 600,000 psi, when tested in accordance with ASTM D 790.
   8. Tensile Strength: 8,000 psi, when tested in accordance with ASTM D 638.
   9. Tensile Modulus: 9,430 psi, when tested in accordance with ASTM D 638.
   10. Barcol Hardness: 40, when tested in accordance with ASTM D 2583.
   11. Impact Resistance: 7 ft-lb/in, when tested in accordance with ASTM D 256, Izod method.
   12. Coefficient of Thermal Expansion: 0.0000157 in/in/degree F, measured in accordance with ASTM D 696.
   13. Water Absorption: 0.17 percent, when tested in accordance with ASTM D 570.
   14. Specific Gravity: 1.53, when tested in accordance with ASTM D 792.
   15. Front Finish: As indicated on Drawings.
      a. Color: As indicated on Drawings.

C. Product: HardStop Decorative Protection Panels by Formica or equal.
   1. Panel Core Material: Treated fiberglass core.
   2. Laminate Grade:
      a. Grade H1, 0.0677 Inches - 0.0827 Inches.
   3. Tested Data:
      a. ANSI / NEMA LD-3: High Pressure Decorative Laminates.
      b. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials. Class 1/A Fire-rated (UL723/ASTM E-84).
         1) Flame-Spread Index: 25 or less.
         2) Smoke-Developed Index: 450 or less.

c. GreenGuard Gold Indoor Air Quality Certified®.
d. SEFA 8.1 approved.
e. ASTM G 22 Bacterial Growth Resistance.

4. Laminate Finish: As indicated on Drawings.
5. Laminate Color(s): As indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Take panels out of cartons and allow to acclimatize to room conditions for at least 48 hours prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Clean surfaces thoroughly prior to installation.

D. Protect existing surfaces from damage due to installation.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use the adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.

C. Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch expansion space.

D. Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.

E. Protect installed products until completion of project.

F. Touch-up, repair or replace damaged products after Substantial Completion.

END OF SECTION 068200

DIVISION 7

THERMAL AND MOISTURE PROTECTION

SECTION 071909 - CONCRETE MOISTURE AND ALKALINITY TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for independent testing and inspection requirements for concrete moisture and alkalinity.

B. Related Sections include the following:
   1. Division 7 Section "Concrete Moisture and Alkalinity Barrier" for concrete sealers to reduce moisture and alkalinity level when testing fails.

1.3 SUBMITTALS

A. Independent testing agency qualifications: Past 4 year history of testing of comparable project size and scope.

B. Product data: Moisture test kit.

C. Testing Results: Provide interior temperature, humidity, moisture vapor and alkalinity results for testing period.
   1. Alkalinity and Adhesion Test Report.
   2. Moisture Test Report.

D. Locations Map: Provide each testing result documented on a locations map. Map may be finish floor plan by Architect or similar representation.

E. Record Submittals: Testing reports and locations map.

1.4 SCHEDULING

A. Site Meeting: Testing Agency, Owner, Architect and Contractor shall meet 30 days prior to flooring installation to discuss testing requirements, specifications and locations prior to testing.

PART 2 - PRODUCTS

2.1 MOISTURE TESTING

A. Test Method: ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
   1. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride is NOT acceptable method.

B. The In-Situ Method:
   1. In-situ probes deepen concrete moisture measurement. For decades, builders used (and some still do) the anhydrous calcium chloride test for concrete moisture vapor emissions rate (MVER). The MVER is defined as the rate of water vapor emissions from the surface of concrete and is determined with the use of a desiccant material sealed to the slab surface for a specified time period, then measured. It has been believed that the change in the desiccant weight could be translated into a moisture ratio for the concrete beneath.
   2. In-situ concrete moisture testing places sensors, or probes, inside the slab itself. As concrete dries, moisture migrates from the bottom of the slab to the surface where it can evaporate away. Logically then, moisture levels at the bottom of a slab will read higher from those at the surface. In-situ probes provide relative humidity (RH) measurements at 40% of the slab's depth*, a position proven to more accurately portray the final RH levels of the slab if it were to be sealed at that point in time and the slab moisture allowed to fully equilibrate.

C. Acceptable Testing Devices for ASTM F2170 Test:
   1. Wagner Meters Rapid RH® system by Wagner.
   2. Protimeter by T Equipment.
   3. Relative Humidity Meter system by American Moisture Test.
   4. Or equal.

2.2 ALKALINITY TESTING

A. Alkalinity Test, ASTM F 710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
   1. Digital wide range 1–14 pH meter.
   2. Waterproof flat tip.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site: Weatherproofed, doors installed and windows secured. Do not start testing process when site has standing water, surface contaminates, exposed to exterior conditions or concrete installation is less than 90 days of age.

3.2 PREPARATION

A. Clean concrete substrates of adhesives residue, paint, curing, sealing, floor coverings a minimum of 24 hours prior to installation of testing equipment.

B. Temperature & Humidity: Maintain site at the temperature and humidity conditions to those anticipated during normal occupancy and maintain these conditions minimum of 7 days (exceed ASTM F1869 requirements) prior and during testing period.

C. When a building is not under HVAC control, a recording hygrometer or data logger shall be in place recording conditions during the test period. A transcript of this information must be included with testing results.

3.3 MOISTURE TESTING

A. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F2170.

B. Floor shall have reading of 95% or less per ASTM F2170; unless finish flooring product require better value.

3.4 ALKALINITY TESTING

A. Test: Perform pH testing per ASTM F710.

B. pH range between 8 and 10; unless finish flooring product require better value.

3.5 FIELD QUALITY CONTROL

A. Testing: Engage and pay for qualified independent testing agency specified to perform the following field tests and inspections and prepare test reports:
   1. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures.
   2. Testing agency shall verify thickness of coatings during traffic coating application.
   3. If test results show coating materials do not comply with requirements, remove noncomplying materials, prepare surfaces, and reapply coatings.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 071909

SECTION 071920 - CONCRETE MOISTURE AND ALKALINITY BARRIER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplemental, and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Concrete moisture and alkalinity barrier when moisture or alkalinity test fails.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for independent moisture and alkalinity testing prior to installation of flooring materials.

1.3 PERFORMANCE REQUIREMENTS

A. Ground and Floor Surfaces: Slip resistant per CBC 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include manufacturer's printed statement of VOC content.

B. Samples: For each type of barrier and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

C. Manufacturer Certificates: Signed by manufacturers certifying that barrier comply with requirements.

D. Qualification Data: For Installer.

E. Product Test Reports: Independent third party testing results:
   1. ASTM E 96 Water Vapor Transmission: up to 95% Vapor Reduction
   2. ASTM D 4541 Concrete Adhesion: 500psi or concrete cohesive failure
   3. ASTM D 1308 Chemical Resistance: 100% resistant to acid and alkali

F. Field Quality Control Documents: Post installation testing by independent testing agency per ASTM F1869, ASTM D 4541.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Extended Warranty Period: Barrier warranty for 15 years covering performance, concrete adhesion, moisture or alkalinity damage to barrier and installed floor coverings. In the event of barrier failure, manufacturer shall cover labor and material cost to replace moisture or alkalinity damaged flooring or coatings, reapply barrier, adhesives, patching compounds and installation accessories.
   1. Moisture Vapor Reduction: No upper performance limitations.
   2. Alkalinity Control: No upper performance limitations.
   3. Manufacturing defects warranties are not acceptable.

B. Warranty shall not exclude ACI documents, dew point, concrete salts, admixtures, resin and silicate surfaces treatments. Installations on slab surfaces deems acceptance of on site conditions. Barrier manufacturer is responsible for complete review of concrete mix designs, admixtures, sub slab vapor barrier installed and curing methods for written acceptance prior to installations.

C. Installer: Submit 15 year warranty covering installation defects and improper installations on workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Concrete Moisture and Alkalinity Barrier: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. VAP-1 2000 FS by Koster. (Basis of Design)
   2. Vapor-Guard DC by Advance Moisture Control.
   3. MES 100 by Floor Seal Technology Inc.
   4. Or equal.

2.2 CONCRETE MOISTURE AND ALKALINITY BARRIER

A. Product: VAP I 2000 FS by Koster or equal.
   1. Fast-setting, one-coat, membrane-forming, moisture vapor control system consisting of a unique combination of epoxy resins and other compounds formulated to prevent floor covering failures on concrete slabs with elevated levels of moisture.
   2. Meets or exceeds the performance requirements in ASTM F3010-13 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
   3. Has no upper limit for water vapor emission from concrete floor slabs. It can be applied to concrete slabs with relative humidity up to 100% RH and it provides protection from sustained exposure to pH 14.
   4. Low permeance of 0.047 perms, moisture blocker for virtually all types of flooring, including low permeance flooring such as sheet goods and rubber tile.
   5. Compliant with all state and federal VOC regulations, having VOC content of 0 g/L, which allows installation in sensitive areas such as hospitals, schools, and grocery stores.

B. Concrete Topcoat: Cement based self-leveling underlayment product acceptable to sealant manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to barrier manufacturer's written instructions, to ensure that surface is dry enough.
   1. Shot blast surface to allow maximum penetration and adhesion. Grind near walls and edges.

B. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live plants and grass.

C. Coordination with Sealants: Do not apply barrier until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
   1. Barrier work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATION

A. Barrier: Apply by squeegee and roller application methods to saturate entire surface. Spread rates shall produce results of up to 95% moisture reduction per ASTM E 96 and post installation testing rate specified.

B. Roller and squeegee methods to saturate concrete porosity. Final surfaces shall be light reflective white.

C. Joint and Crack Treatment: Apply barrier directly over cracks, holes, and slab imperfections for maximum flexibility, moisture vapor and alkalinity control.

D. Cement Topcoat: As required for applications under resilient flooring for sealants installed after curing of concrete.

3.3 FIELD QUALITY CONTROL

A. Site Tests:
   1. Conduct moisture-alkalinity test by an independent testing company prior to resilient flooring and carpet installation.

3.4 CLEANING

A. Immediately clean barrier from adjoining surfaces and surfaces soiled or damaged by barrier application as work progresses. Repair damage caused by barrier application. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071920

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Concealed thermal and sound insulation.

B. Related Sections include the following:
   1. Division 9 Section "Gypsum Board" for installation in metal-framed assemblies of insulation specified by referencing this Section.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Surface-Burning Characteristics: ASTM E 84.
   2. Fire-Resistance Ratings: ASTM E 119.
   3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of building insulation that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass-Fiber Batt/Blanket Thermal and Sound Insulation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Johns Manville (JM). (Basis of Design)
   2. CertainTeed Corporation.
   3. Guardian Fiberglass, Inc.
   4. Knauf Fiber Glass.
   5. Owens Corning.
   6. Lamtec.
   7. Or equal.

B. Extruded Polystyrene Foam: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Styrofoam Z-Mate by Dow. (Basis of Design)
   2. Atlas.
   3. DiversiFoam Products.
   4. Owens Corning.
   5. Pactiv Building Products Division.
   6. Or equal.

2.2 GLASS-FIBER BATT/BLANKET INSULATION

A. Unfaced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics. Glass-fiber bonded with acrylic thermosetting binder.
   1. For walls and partitions: Unfaced Batts.

2. Formaldehyde-free, Unfaced Batts by JM or equal.

B. Faced, Glass-Fiber Batt/Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft vapor-retarder membrane on 1 face.
   1. For ceilings under decks: FSK-25 Faced Batts with 2 inch tabs or Panel Deck FSK-25 Faced Batts with 5 inch tabs.
   2. Formaldehyde-free, FSK-25 Faced Batts by JM or equal.

C. Thermal Rating: R values as indicated on Drawings.

2.3 EXTRUDED POLYSTYRENE FOAM (RIGID INSULATION)

A. Extruded Polystyrene Foam: ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively.
   1. 1.5 inch thick board: R-7.5.
   2. R-rating: Built-up board to comply with R-rating indicated on Drawing.

2.4 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inches wide.

B. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Install insulation in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
   4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
   5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically.
   6. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:

D. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces for sound deadening, sound absorption, thermal protection, or air-infiltration reduction. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

3.5 INSTALLATION OF INSULATION IN CEILINGS

A. Install insulation to achieve thermal indicated attached to roof or floor deck from below.

B. Insulation to roof or floor deck: Install by one of following methods.
   1. Staple insulation to sides of joists or trusses at 4 inches o.c. through bent down flanges of vapor barrier in such manner that air leaks between insulation and joints are minimized.
   2. Fasten insulation anchors to deck substrates with insulation anchor according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 076500 - FLEXIBLE SHEET FLASHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Flexible sheet flashing for windows, doors, parapets, and other openings and where indicated on Drawings.

1.3 SUBMITTALS

A. Concurrent Review Requirements: Submit submittals of this section with doors and windows sections.

B. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of flexible sheet flashing.

C. Shop Drawings: Show locations and extent of flexible sheet flashing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

D. Samples: For the following products:
   1. 12-by-12-inch square of flexible sheet flashing.

E. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

F. Qualification Data: For Installer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for flexible sheet flashing.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm that is acceptable to flexible sheet flashing manufacturer for installation of flexible sheet flashing required for this Project.

B. Source Limitations: Obtain flexible sheet flashing materials through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by flexible sheet flashing manufacturer.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Store rolls according to manufacturer's written instructions.

E. Protect stored materials from direct sunlight.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of flexible sheet flashing that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flexible Sheet Flashing: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. WR Grace (Basis of Design).
   2. FortiFlash by Fortifiber.
   3. FlexWrap and StraightFlash by DuPont.
   4. Or equal.

2.2 FLEXIBLE SHEET FLASHING

A. Product: Vycor Plus by WR Grace or equal.
   1. Self-Adhered, cross-laminated high-density polyethylene (HDPE) sheet, backed by aggressive pressure-sensitive rubberized asphalt adhesive.
   2. Thickness: 25 mil minimum per ASTM D3767, Method A.
   3. Low temperature flexibility: Unaffected at minus 45 degrees F. per ASTM D1970.

4. Elongation, ultimate failure of rubberized asphalt: 200 percent minimum per ASTM D412.
5. Cracked cycling 100 cycles: Unaffected at minus 25 degrees F. per ASTM C836.
6. Lap adhesion at minimum application temperature: 60 plf width per ASTM D1876 modified.
7. Adhesion to concrete at minimum application temperature: 60 plf width per ASTM D903.
8. ICBO: ER-6141.
9. Recommended exposure limit: 30 days.
10. Perm-A-Barrier by Grace is not acceptable.

2.3 AUXILIARY MATERIALS

A. Mastic, Joint Sealant, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by flexible sheet flashing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by flexible sheet flashing manufacturer.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install flexible sheet flashing in accordance with the manufacturer's written instructions, AAMA Publication 2400, and the applicable code.

END OF SECTION 076500

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

D. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.

E. Qualification Data: For Installer.

F. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
   1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
   2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

G. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
   1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
   2. When joint substrates are wet.
   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
   4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 2 years.

B. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
   1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

C. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Joint Sealants: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Sika Corporation
   2. Pecora Corporation.
   3. Bostik.
   4. Dow Corning Corp.
   5. GE Plastics.
   6. Sonneborn Building Products, ChemRex, Inc.
   7. Tremco, Inc.
   8. The Sherwin-Williams Company.
   9. Or equal.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

C. Colors of Exposed Joint Sealants:
   1. As selected by Architect from manufacturer's full range.
   2. Areas where concrete joint sealant will be adjacent to concrete other than standard gray, sealant color shall match adjacent color as approved by Architect.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
   3. Remove laitance and form-release agents from concrete.
      a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
   4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
   1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
   2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
   3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.

4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT LOCATION

A. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
   1. Products:
      a. SikaFlex 1A or 15LM by Sika Corp.
      b. Dynatrol I-XL by Pecora.
      c. Stampede 1 by The Sherwin-Williams Company.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Metal Lap Joint Sealant: Silicone, Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
   1. Products:
      a. SikaSil WS-295 Silicone by Sika Corp.
      b. 895 Silicone or Sil-Span by Pecora.
   2. Color: Standard colors matching finished surfaces.
   3. Applications:
      a. Concealed sealant bead in sheet metal work.

b. Concealed sealant bead in siding overlaps.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
1. Products:
a. AC-20 manufactured by Pecora.
b. 950A manufactured by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Applications:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Interior Floor Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Grade P, Class 25, Uses T, M and A; two-part.
1. Products:
a. SikaFlex 2C SL or NS with TG Additive by Sika Corp.
b. NR-200 self-leveling polyurethane and/or DYNATRED non-sag, traffic-grade polyurethane sealants by Pecora.
c. Stampede 2SL by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Standard colors matching finished surfaces.
4. Applications: Use for joints up to 1-1/2 inches.
a. Expansion joints in floors.

E. Concrete Paving Joint Sealant: Polyurethane, chemically-curing, cold-applied, self-leveling elastomeric sealant; ASTM C 920, Class 25, Uses T, I, M and A; two-part.
1. Products:
a. NR-200 Urexpan and/or DYNATRED non-sag, traffic-grade polyurethane sealant by Pecora or equal.
b. Stampede 2NS by The Sherwin-Williams Company.
2. Primer: SikaFlex 429 Primer; P-150, P-75 or P-200.
3. Color: Gray or Limestone.
4. Applications:
a. Joints in sidewalks and vehicular paving.

F. Butyl Sealant: ASTM C 920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O; single component, solvent release, non-skinning, non-sagging.
1. Products:
a. BC-158 sealant by Pecora.
b. WL Silicone Rubber by The Sherwin-Williams Company.
2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 12-1/2 percent.
4. Service Temperature Range: -13 to 180 degrees F.
5. Shore A Hardness Range: 10 to 30.

G. Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Products:
a. SikaSil WS 290 or WS 295 by Sika Corp.

b. 864 LM Architectural silicone or 890 silicone sealant by Pecora.
c. 790 by Dow Corning Corporation.
d. WL Silicone Ultra WL09210.

2. Color: Standard colors matching finished surfaces.
3. Movement Capability: Plus and minus 25 percent.
4. Applications:
   a. Interior or exterior for joints 1/8 to 1-1/2 inch wide.
   b. Exterior use at expansion joints in masonry where substantial movement is expected.
   c. Glazing application.

END OF SECTION 079200

DIVISION 8

DOORS AND WINDOWS

SECTION 081113 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Standard hollow metal doors and frames.

B. Related Sections include the following:
   1. Division 8 Section “Door Hardware” for door hardware for hollow metal doors.
   2. Division 9 Section “Painting” for field painting hollow metal doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings.

B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
   1. Provide additional protection to prevent damage to finish of factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.
   1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of steel doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Steel Doors and Frames: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Steelcraft; an Ingersoll-Rand company. (Basis of Design).
   2. Ceco Door Products; an Assa Abloy Group company.
   3. Curries Company; an Assa Abloy Group company.
   4. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B; suitable for exposed applications for interior doors and frames.

B. Galvannealed (Metallic-Coated) Steel Sheet: ASTM A 653, Commercial Steel (CS), Type B; with minimum A60 metallic coating for exterior doors and frames.

C. Frame Anchors: ASTM A 591, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
   1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008 or ASTM A 1011, hot-dip galvanized according to ASTM A 153, Class B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153.

E. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.

F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143.

G. Glazing: Comply with requirements in Division 8 Section "Glazing."
   1. Wired glass is not allowed.
   2. Tempered or fire-rated where required.

H. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD HOLLOW METAL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
   1. Design: Flush panel.
   2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
      a. Standard Core: Honeycomb, U-factor of 0.69, R-value of 1.45.
      b. Fire Door Core: As required to provide fire-protection indicated.
   3. Vertical Edges for Single-Acting Doors: Beveled edge.
      a. Beveled Edge: 1/8 inch in 2 inches.
   4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
   5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.
   6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
   7. Vision, Narrow Lite, Half Glass Doors: Size as indicated on Drawings.

B. Exterior Doors: Face sheets fabricated from galvannealed (metallic-coated) steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 16 gage (0.053 inch).
         1) Product: Series L16 by Steelcraft.

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless galvanized (metallic-coated) sheet is indicated. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
   1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush):
      a. Face thickness: 18 gage (0.042 inch).
         1) Product: Series L18 by Steelcraft.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.4 STANDARD HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated from metallic-coated steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile welded unless otherwise indicated.
   3. Frame: 14 gage (0.067-inch) thick steel sheet.
      a. Product: F14 Series by Steelcraft.

C. Interior Frames: Fabricated from cold-rolled steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile welded. Knocked down is not allowed.
   3. Frame: 16 gage (0.053-inch) thick steel sheet.
      a. Product: F16 Series by Steelcraft.
   4. Frames for Wood Doors: Same type as for steel doors.
   5. Frames for Borrowed Lights: Same as adjacent door frame.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:
   1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
   2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
   3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
   1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
   2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- wide steel.

C. Provide Screw-In Top Cap for exterior doors.

D. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

2.7 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Tolerances:
   1. Standard doors and frames: Fabricate hollow metal work to tolerances indicated in SDI 117.

C. Hollow Metal Doors:
   1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
   2. Glazed Lites: Factory cut openings in doors.
   3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
   2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
6. Jamb Anchors: Provide number and spacing of anchors as follows:
   a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      1) Three anchors per jamb up to 60 inches high.
      2) Four anchors per jamb from 60 to 90 inches high.
      3) Five anchors per jamb from 90 to 96 inches high.
      4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
      5) Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.
   b. Compression Type: Not less than two anchors in each jamb.
   c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
   1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
   2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
   3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.

G. Air Infiltration: Maximum rate not more than indicated when tested according to AAMA/WDMA 101/I.S.2/NAFS, Air Infiltration Test.
   1. Maximum Rate: 0.3 cfm/sq. ft. of area at an inward test pressure of 1.57 lbf/sq. ft.
   2. Maximum Rate: 0.1 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft.

2.8 STEEL FINISHES

A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Field-Applied Paint Finish: Comply with Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
   1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
   1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire-protection-rated openings, install frames according to NFPA 80.

b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
c. Install frames with removable glazing stops located on secure side of opening.
d. Install door silencers in frames before grouting.
e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
g. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
   a. Post-installed expansion anchors shall comply with IR 19-1.
   b. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
7. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
   a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes solid-core doors.

B. Related Sections include the following:
   1. Division 8 Section "Steel Doors and Frames" steel door frames.

1.3 SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.

B. Other Action Submittals:
   1. Schedule: Provide a schedule of flush wood door work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
      a. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
      b. Indicated specific model number of door and frame.
      c. Indicated hardware group.
      d. Indicate dimensions and locations of mortises and holes for hardware.
      e. Indicate dimensions and locations of cutouts.
      f. Indicate doors to be factory finished and finish requirements.
      g. Indicate fire ratings for fire doors.

C. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:
   1. Faces of Factory-Finished Doors: Show the full range of colors available for stained finishes.

D. Samples for Verification:
   1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edgings representing typical range of color and grain for each species of veneer and solid lumber required. Finish sample with same materials proposed for factory-finished doors.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

B. Quality Standard: Comply with NWWDA I.S.1-A, "Architectural Wood Flush Doors."
   1. Performance duty Level: Extra Heavy Duty.
   2. Factory machined for door hardware and high density hardware blocking.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to CBC Section 715.
   1. Oversize, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide oversize fire door label or certificate of inspection, from a testing and inspecting agency acceptable to authorities having jurisdiction, stating that doors comply with requirements of design, materials, and construction.
   2. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch top to bottom, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty:
   a. Solid-Core Interior Doors: Life of installation.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flush Wood Doors: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Architectural Series by Oregon Door. (Basis of Design)
      a. Profile: Standard Profile, PC-5.
   2. Marshfield-Algoma; Masonite Inc.
   3. Eggers Industries; Architectural Door Division.
   4. VT Industries Inc.
   5. Or equal.

2.2 DOOR CONSTRUCTION, GENERAL

A. Adhesives: Do not use adhesives containing urea formaldehyde.

B. Doors for Transparent Finish:
   1. Grade: Custom (Grade A faces).
   2. Species and Cut: Plain sliced white birch, rotary cut.
   3. Match between Veneer Leaves: Book match.
   4. Assembly of Veneer Leaves on Door Faces: Running match.
   5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
   6. Stiles: Same species as faces.

2.3 SOLID-CORE DOORS

A. Core:
   1. Structural-Composite-Lumber-Core: WDMA I.S.10.
      a. Screw Withdrawal, Face: 700 lbf.
      b. Screw Withdrawal, Edge: 400 lbf.

B. Doors:
   1. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

C. Veneer-Faced Doors:

1. Construction: Five or seven plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

D. Fire-Rated Doors:
1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
2. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.
3. Edge Construction: At hinge stiles, provide manufacturer's standard laminated-edge construction with improved screw-holding capability and split resistance and with outer stile matching face veneer.
4. Pairs: Furnish formed-steel edges and astragals with intumescent seals for pairs of fire-rated doors, unless otherwise indicated.
   a. Finish steel edges and astragals with baked enamel same color as doors.

2.4 DOOR FRAMES

A. Hollow Metal Frames: Comply with Division 8 Section “Steel Door and Frames”.

2.5 FABRICATION

A. Fabricate doors in sizes indicated for Project-site fitting.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing.

B. Finish doors at factory.

C. Transparent Finish:
1. Grade: Custom.
2. Finish: NWWDA I.S.1-A System TR-6 catalyzed polyurethane.
3. Staining: As selected by Architect from manufacturer's full range.
4. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.
   1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Division 8 Section "Door Hardware."

B. Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
   1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
   1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold.
      a. Comply with NFPA 80 for fire-rated doors.
   2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
   3. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Access doors and frames for walls and ceilings.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for mortise or rim cylinder locks and master keying.
   2. Division 9 Section “Painting” for field applied finishes.

1.3 SUBMITTALS

A. Product Data: For each type of access door and frame indicated. Include construction details, materials, individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.

D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of access door(s) and frame(s) through one source from a single manufacturer.

B. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of access doors and frames that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Access Doors and Frames: Subject to compliance with requirements, provide products by one of the following:
   1. Karp Associates Inc.
   2. Acudor.
   3. Milcor Inc.
   4. Nystrom, Inc.
   5. MIFAB.
   6. Or equal.

2.2 STEEL MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153, for galvanizing steel and iron hardware.

B. Steel Sheet: Cold-rolled steel sheet substrate complying with ASTM A 1008, Commercial Steel (CS), exposed.

C. Steel Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   1. Factory Surface Preparation for Steel Sheet: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
   2. Field Finish: Factory prime for field painting as specified in Division 9 "Painting".

D. Drywall Beads: Edge trim formed from 0.0299-inch zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum board.

2.3 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Recessed Door to Receive Drywall Type:
   1. Fire-Rated: Model 450FR by Karp.
   2. Non-Fire-Rated: Model RDW by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Door shall be recessed 1 inch.
   5. Trim shall be galvanized steel dry wall bead.
   6. Hinge shall be concealed pivoting rod type.
   7. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   8. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   9. Door Sizes:
      a. As indicated on Drawings.
   10. Field Finish: Comply with Division 9 Section “Painting”.

B. Flange Type:
   1. Fire-Rated: Model KRP-250 by Karp.
   2. Non-Fire-Rated: Model DSC-214M by Karp.
   3. Frame shall be 14 gage steel and doors shall be 16 gage steel.
   4. Flange: One-piece construction, 3/4 inch wide.
   5. Hinge shall be concealed continuous piano hinge.
   6. Locks shall be flush and screwdriver operated with stainless steel cam and studs, or shall be key operated cylinder lock with automatic dust shutter.
   7. Finish shall be prime coat of rust inhibitive electrostatic powder, baked grey coat.
   8. Door Sizes:
      a. As indicated on Drawings.
   9. Field Finish: Comply with Division 9 Section “Painting”.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
   1. Exposed Flanges: Nominal 1 to 1-1/2 inches wide around perimeter of frame.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
   1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

A. Field finish per Division 9 Section “Painting”.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 083214 - FOLDING ALUMINUM-FRAMED GLASS DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding aluminum-framed glass doors.

B. Related Sections include the following:
   1. Division 8 Section "Door Hardware" for hardware not specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide folding aluminum-framed glass doors capable of complying with performance requirements indicated, based on testing manufacturer's folding doors that are representative of those specified, and that are of minimum test size indicated below:
   1. Size required by AAMA/WDMA/CSA 101/I.S.2/A440 for gateway performance.

B. Structural Performance: Provide folding aluminum-framed glass doors capable of withstanding the effects of the following loads, based on testing units representative of those indicated for Project that pass AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Load Structural Test:
   1. Design Wind Loads: Determine design wind loads under conditions indicated according to ASCE/SEI 7.
   2. Deflection Limits: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less, at design pressure based on testing performed according to AAMA/WDMA/CSA 101/I.S.2/A440, Uniform Load Deflection Test, or structural computations.

C. Windborne-Debris Resistance: Provide sliding aluminum-framed glass doors capable of resisting impact from windborne debris, based on the pass/fail criteria as determined from testing sliding aluminum-frames glass doors identical to those specified, according to ASTM E 1886 and testing information in ASTM E 1996 or AAMA 506 and requirements of authorities having jurisdiction.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions.

B. Shop Drawings: For folding aluminum-framed glass doors. Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, and the following:
   1. Mullion details for fenestration combinations including reinforcement and stiffeners.
   2. Joinery details.
   3. Expansion provisions.
   4. Flashing and drainage details.
   5. Weather-stripping details.
   6. Thermal-break details.
   7. Glazing details.
   8. Accessories.

C. Samples for Initial Selection: For each type of folding aluminum-framed glass door indicated.
   1. Include similar Samples of hardware and accessories involving color selection.

D. Samples for Verification: For folding aluminum-framed glass doors and components required, prepared on Samples of size indicated below:
   1. Main Framing Member: 12-inch- long section with weather stripping, glazing bead and factory-applied color finish.
   2. Hardware: Full-size units with factory-applied finish.

E. Qualification Data: For qualified Installer and manufacturer.

F. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency, for each class, grade, and size of folding aluminum-framed glass door. Test results based on use of downsized test doors will not be accepted.

G. Maintenance Data: For finishes, weather stripping, operable panels, and operating hardware to include in maintenance manuals.

H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating folding aluminum-framed glass doors that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: An installer acceptable to folding door manufacturer for installation of units required for this Project.
   1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility including preparation of data for folding aluminum-framed glass doors, including Shop Drawings and Designated-Design Submittal, based on

testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: Obtain folding aluminum-framed glass doors from single source from single manufacturer.

D. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of folding aluminum-framed glass doors. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

E. Fenestration Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440, "Standard/Specification for Windows, Doors, and Unit Skylights," for minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
   1. Provide AAMA or WDMA-certified, folding aluminum-framed glass doors with an attached label.

F. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201.
   1. Subject to compliance with requirements, permanently mark safety glass with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction.

G. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of folding aluminum-framed glass door openings by field measurements before fabrication.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of folding aluminum-framed glass doors that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to meet performance requirements.
      b. Structural failures including excessive deflection.
      c. Water leakage or air infiltration.
      d. Faulty operation of movable sash and hardware.
      e. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      f. Deterioration of insulating glass as defined in Division 8 Section "Glazing."
   2. Warranty Period:
      a. Folding Door: 5 years.

b. Glazing: 10 years.
c. Metal Finish: 5 years.

B. Installer's Warranty: 2 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Folding Aluminum-Framed Glass Doors:
1. Arcadia. (Basis of Design)
2. Nana Wall Systems, Inc.
3. Fleetwood.
4. Western.
5. LaCantina Doors.
6. Or equal.

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by folding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.

B. Fasteners: Provide fasteners of aluminum, nonmagnetic stainless steel, or other materials warranted by manufacturer to be noncorrosive for SC 3 severe service conditions and compatible with members, trim, hardware, anchors, and other components of folding aluminum-framed glass doors. Comply with AAMA/WDMA/CSA 101/I.S.2/A440.
1. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Accessories: Provide anchors, clips, and accessories of aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron for folding aluminum-framed glass doors, complying with ASTM B 456 or ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Provide aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel reinforcing members that are noncorrosive for SC 3 severe service conditions and that comply with AAMA/WDMA/CSA 101/I.S.2/A440; provide sufficient strength to withstand design pressure indicated.

E. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action, and completely concealed when folding aluminum-framed glass door is closed.
1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/WDMA/CSA 101/I.S.2/A440.

F. Folding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701.
   1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semirigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 702.

G. Sealant: For sealants required within fabricated folding doors, provide folding aluminum-framed glass door manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

H. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

2.3 FOLDING DOOR

A. Product: 8000 Series Bi-Folding Aluminum Door, 1-3/4” by Arcadia or equal.
   1. Configuration: As indicated on Drawings.
   2. Swing door: One swing door as part of assembly.
   3. Glazing Insert: Snap-in type for 1/4” infill.
   4. Major portions of the door stiles shall be a nominal .125”” and glass stops shall be .050” thick.
   5. Materials and Accessories
      a. Door members: Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10aT5).
      b. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc plated steel in accordance with ASTM A-164 shall be aluminum or steel, providing the steel is properly isolated from aluminum.
      c. Glazing Gasket (compression-type design).
   6. Hardware:
      a. Weatherstripping: A hard-backed polypile weatherstrip shall be installed in frame and interlockers and meeting stiles of bi-parting doors. Sliding panel supplied with double sweep at sill.
      b. Sill track: Aluminum.
      c. Stainless Steel Roller Guide Spindle.
      d. Guide Channel: aluminum.
      e. Top Guide Carrier/Hanger.
      f. Adams Rite maximum security lock.
      g. Cylinders (interior and exterior).
      h. Removable custodial hardware in lieu of pull handles at operable panels.

2.4 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Finish and Color: Match Division 8 Section “Aluminum-Framed Entrances and Storefronts” as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
   1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
   2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches of opening.
   3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

B. Verify rough opening dimensions, levelness of threshold substrate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight folding aluminum-framed glass door installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing doors, hardware, accessories, and other components.

B. Install folding aluminum-framed glass doors level, plumb, square, true to line, without distortion, warp or rack of frames and panels, or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing, vapor retarders, air barriers, water/weather barriers, and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

D. Install folding aluminum-framed glass doors and components to drain condensation, water penetrating joints, and moisture migrating within doors to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials according to ASTM E 2112, Section 5.12 "Dissimilar Materials."

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Lubricate hardware and moving parts.

B. Adjust operating panels and screens to provide a tight fit at contact points and weather stripping for smooth operation, without binding, and a weathertight closure.

C. Adjust hardware for proper alignment, smooth operation, and proper latching without unnecessary force or excessive clearance.

D. Clean aluminum surfaces immediately after installing folding doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Avoid damaging protective coatings and finishes. Remove nonpermanent labels, and clean surfaces.

E. Clean glass immediately after installing folding aluminum-framed glass doors. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.

F. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

G. Protect folding door surfaces from contact with contaminating substances resulting from construction operations. During construction, monitor folding door surfaces adjacent to and below exterior concrete and masonry surfaces for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact folding door surfaces, remove contaminants immediately according to manufacturer's written instructions.

H. Refinish or replace folding aluminum-framed glass doors with damaged finishes.

I. Replace damaged components.

END OF SECTION 083214

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. DSA Deferred Approval.
   2. Aluminum-framed storefronts.
   3. Manual-swing aluminum doors.

B. Related Sections include the following:
   1. Division 1 Section “Submittal Procedures” for additional DSA Deferred Approval requirements.
   2. Division 7 Section “Flexible Sheet Flashing” for flashing windows, door, and other openings.
   3. Division 7 Section "Joint Sealants" for installation of joint sealants installed with aluminum-framed systems and for sealants to the extent not specified in this Section.
   4. Division 8 Section “Steel Doors and Frames” for windows made of hollow metal frames.
   5. Division 8 Section "Glazing" for glazing requirements to the extent not specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
   1. Structural loads.
   2. Thermal movements.
   3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
   4. Dimensional tolerances of building frame and other adjacent construction.
   5. Failure includes the following:
      a. Deflection exceeding specified limits.
      b. Thermal stresses transferred to building structure.
      c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
      d. Noise or vibration created by wind and thermal and structural movements.
      e. Loosening or weakening of fasteners, attachments, and other components.
      f. Sealant failure.
      g. Failure of operating units to function properly.

B. Structural Loads:
   1. Wind Loads: As indicated on Drawings.
   2. Seismic Loads: As indicated on Drawings.

C. Deflection of Framing Members:
   1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
   2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:
   1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity but not less than 10 seconds.

E. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft.

F. Water Penetration Under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

G. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 53 when tested according to AAMA 1503.

H. Average Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having average U-factor of not more than 0.69 Btu/sq. ft. x h x deg F when tested according to AAMA 1503 or NFRC 100/200 values.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product indicated.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

C. Fabrication Sample: Of each vertical-to-horizontal intersection of systems, made from 12-inch lengths of full-size components and showing details of the following:
   1. Joinery.

2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems.

E. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Capable of assuming engineering responsibility and performing work of this Section and who is acceptable to manufacturer.
1. Engineering Responsibility: Preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer's standard assemblies.

B. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

C. Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

D. Welding: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code--Aluminum."

E. Mockups: Build mockups to demonstrate aesthetic effects and set quality standards for fabrication and installation.
1. Build mockup of typical wall area as shown on Drawings.
2. Field testing shall be performed on mockups according to requirements in Part 3 "Field Quality Control" Article.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 WARRANTY

A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including, but not limited to, excessive deflection.
      b. Noise or vibration caused by thermal movements.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      d. Water leakage through fixed glazing and framing areas.
      e. Failure of operating components to function properly.
   2. Warranty Period: 2 years.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.

C. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Entrance, Storefronts, and Windows: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Arcadia Inc. (Basis of Design)
   2. Kawneer.
   3. EFCO Corporation.
   4. Oldcastle Building Envelop.
   5. Or equal.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   1. Sheet and Plate: ASTM B 209.
   2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308.
5. Welding Rods and Bare Electrodes: AWS A5.10.

B. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
1. Structural Shapes, Plates, and Bars: ASTM A 36.
2. Cold-Rolled Sheet and Strip: ASTM A 1008.
3. Hot-Rolled Sheet and Strip: ASTM A 1011.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

F. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

G. Product: TC470 Thermally Broken Series by Arcadia or equal.
1. Type: 2-1/4 by 4-1/2 inch offset captured glazed system.
2. Framing members, transition members, mullions, adaptors, and mounting: Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10a T6).
3. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM.A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.
4. Glazing: As indicated on Drawings and as specified in Division 8 “Glazing”.
5. Glazing Gasket (Silicone Compatible)
   a. Compression-type design, replaceable, molded or extruded santoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).

b. Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.

6. Sound Transmission Lost Test by ETS-Lindgren Acoustical Research Laboratory, a NVLAP-Accredited under Lab Code 100286-0.
   a. STC: 36.

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 8 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

2.5 DOORS AND FRAMES

A. Product: WS512 Series, Wide Stile Door 1-3/4” by Arcadia.
   1. Vertical Stiles: 5 inches.
   2. Top Rail: 5-1/8 inches.
   3. Bottom Rail: 10-1/2 inches.
   4. Glazing Stops: Square snap-in type.
   5. Glazing: 1/4 inch as specified in Division 8 Section “Glazing”.
   6. Glazing Gasket: Compression-type design.
   7. Major portions of the door stiles a nominal .125 inches and glass stops .050 inches thick.
   8. Door members: Extruded 6063-T6 aluminum alloy (ASTM B221-Alloy G.S. 10a T6).
   9. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc plated steel in accordance with ASTM A-164. Shall be aluminum or steel, providing the steel is properly isolated from aluminum.
   10. Stiles and rails shall be tubular sections accurately joined, flush and hairline at corners with heavy concealed reinforcement brackets secured with machine bolts, with optional MIG weld. Exposed screws not permitted.
   11. Each door leaf equipped with an adjusting mechanism, located in the top rail near the lock stile.
   12. Prepare internal reinforcement for door hardware.
   13. Weatherstripping: Hard-backed poly pile in door and/or frame. Meeting stile of all pair of doors have a double line hard-backed poly-pile astragal.

B. Door Hardware: Factory hardware and as specified in Division 8 Section "Door Hardware."
   1. Door hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the general contractor and the entrance manufacturer to insure the building project is not delayed. Coordinate master-keyed requirements.

2. Weather Stripping: Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC to keep the water out. Do not use standard brush type.
3. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.6 ACCESSORY MATERIALS

A. Insulating Materials: As specified in Division 7 Section "Building Insulation."

B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 7 Section "Joint Sealants."

C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

D. Break Metal: Material and finish to match storefronts as approved by Architect.

2.7 FABRICATION

A. Form aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing from interior.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing (without projecting stops).

E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

F. Doors: Reinforce doors as required for installing hardware.

1. At pairs of exterior doors, provide sliding weather stripping retained in adjustable strip mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Hardware Installation:
1. Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.
2. Hardware supplier shall furnish hardware to door manufacturer prior to fabrication and coordinate hardware delivery with door manufacturer to insure project is not delayed.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
1. Color: Dark Bronze #40 as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:
1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight, unless otherwise indicated.

B. Metal Protection:
   1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
   2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

F. Entrances: Install to produce smooth operation and tight fit at contact points.
   1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
   2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

G. Install insulation materials as specified in Division 7 Section "Building Insulation."

H. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

I. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
   1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
   2. Alignment:
      a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
      b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
   3. Diagonal Measurements: Limit difference between diagonal measurement to 1/8 inch.

3.3 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.
   1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

END OF SECTION 084113

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Door hardware.
2. Door Hardware Schedule.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 2000 - Finish Carpentry.
3. Section 08 1113 - Hollow Metal Doors and Frames.
4. Section 28 3100 - Fire Detection and Alarm

C. Items listed in other sections and not included herein as “Door Hardware”

1. Cabinet hardware, except keying.
2. Toilet accessories, excepting keying.
3. Nameplates, room numbers exit signs.
4. Accessibility signs.
5. Smoke detectors, 120VAC power, wiring, and conduit.
6. Door position switches.
7. Access panels, except padlocks.

1.02 DESIGN REQUIREMENTS

A. Design Requirements:

1. Exit doors, including each leaf of a pair of doors, shall always be operable from the inside by the simple turn of a lever or by pushing an exit device without the use of a key or any special knowledge or effort; this includes doors of storage rooms.

2. Unless otherwise specified, hand activated door opening hardware shall be located 36 inches above the finish floor.

3. Dead bolts are not permitted unless operable with a single effort by a lever type hardware.

4. The force applied to operate exit hardware shall not require more than 5 lbs. maximum applied in the direction of travel.

5. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.

6. The clear opening width for a door shall be 32" minimum. For a swinging door it shall be measured between the face of the door & the stop, with the door open 90 degrees. There shall be no projections into it below 34" and 4" maximum projections into it between 34" and 80" above the finish floor or ground. Door closers and stops shall be permitted to be 78" minimum above the finish floor or ground. CBC Section 11B-404.2.3.

7. Handles, pulls, latches, locks and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. Operable parts of such hardware shall be 34" minimum and 44" maximum above the finish floor or ground. Where sliding doors are in the fully open position, operable hardware shall be exposed and usable from both sides. CBC 11B-404.2.7.

8. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.

    a. Interior hinged doors, sliding or folding doors and hinged doors: 5 pounds. Maximum. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in the closed position.

    b. The force required for activating any operable parts, such as lever hardware or disengaging other devices shall be 5 pounds maximum to comply with CBC 1B-309.

B. Regulatory Requirements:

1. Comply with CBC requirements.

2. Hardware for fire doors shall conform to requirements of UL - Fire Protection and Accident Hazard Equipment and the California State Fire Marshal listing, NFPA - 80 and CBC requirements for positive pressure testing.

3. Hardware shall meet the requirements of CBC, Chapter 11B.

4. Door closing speed shall be as follows: CBC Section 11B-404.2.8. Closer shall be adjusted so the required time to move a door from a open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum. Spring hinges shall be adjusted so that the time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.

5. Threshold shall comply with CBC section 11B-404.2.5.

6. Floor stops shall not be located in the path of travel and 4” maximum from walls.

7. Hardware (including panic hardware) shall not be provided with “Night Latch” (NL) function for any accessible doors or gates unless the following conditions are met: (Such conditions must be clearly demonstrated and indicated in the specifications) Such hardware has a dogging feature and it is dogged during the time the facility is open.

1.03 SUBMITTALS

A. Product Data: Finish Hardware Schedule:

1. Submit schedule including recap sheet:

a. Include manufacturer’s name, catalog number, relevant dimensions, fasteners, location of item in Work, door index number, frame material, door material, door size and thickness, door type, handing, fire-rating (if any), and sound-rating (if any).

b. Hardware shall be listed by "Headings" in following manner:

1) HEADING NO. 1

1 SINGLE/PAIR OF DOORS NO. (Room and Number) from/to (Room and Number)

1 SINGLE/PAIR OF DOORS NO. (Room and Number) from/to (Room and Number)

List the appropriate numbers from the finish hardware.

2) HEADING NO. 2, etc.

1.04 QUALITY ASSURANCE

A. Each type of finish hardware furnished for the Work shall be of same make or manufacture, unless otherwise specified. Where existing items are being supplemented with new items, match existing items, subject to current code requirements and accessibility recommendations.

B. Coordinate and deliver templates or physical Samples of finish hardware items to manufacturer of interfacing items, such as doors and frames, in a timely manner to insure orderly progress of Work.

C. Comply with the following as a minimum requirement:

1. Conform to Builders Hardware Manufacturers Association (BHMA) Finish Code, latest edition.

2. DHI WDHS.3: Recommended Locations for Architectural Hardware for Wood Flush Doors

3. DHI WDHS.4: Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors.

4. HMMA 831: Recommended Hardware Locations for Custom Hollow Metal Doors and Frames

1.05 DELIVERY, STORAGE AND HANDLING

A. Package each item of hardware and each lockset individually, complete with necessary installation instructions, screws and fastenings, and installation templates; marked with item number corresponding to number on Finish Hardware Schedule.

1.06 WARRANTY

A. Manufacturer shall provide a minimum two year material warranty except as follows:

1. Provide a ten year manufacturer's material warranty for door closers.

2. Provide a five year manufacturer's material warranty for locksets and exit devices.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Butts and Hinges:

1. Width of hinges shall be of sufficient size to clear trim.

2. Furnish one pair of hinges for door leaves up to 5-foot high. Furnish one additional hinge for every additional 30 inches or fraction thereof.

3. Butts for doors shall be non-rising, loose pins, with button tip.

4. Exterior and interior out-swinging doors with butt hinges shall be furnished with hinges furnished with a setscrew in hinge barrel to make pin non-removable (NRP); Butt hinges at exterior out-swinging doors shall have stainless steel pins and bearings.

5. Hinges installed on painted doors shall be BHMA 600 finishes. Exterior doors shall have non-ferrous hinges. Fire-rated doors shall have steel or stainless steel hinges.

B. Locksets and Trim:

1. Unless otherwise specified, locks shall be of mortise type, complying with ANSI A156.13, grade 1.

2. Unless otherwise specified, escutcheons shall be 7 ½-inch by 2 ¼-inch wide by 0.050 thick minimum.

3. Levers shall be cast, and shall return to within ½ inch of face of door.

4. Outside lever shall be pinned. Inside lever shall be by "Allen Head Set Screw" or by "Spanner Ring Nut".

5. Lock strikes shall be curved lip type, with exposed edges and corners rounded, of sufficient length to protect jamb and trim, and shall not extend more than 1/8 inch beyond trim, jambs or face of doors in pairs. At out-swinging pairs with overlapping astragal, strike shall have a 7/8 inch lip-to-center dimension. Dust box shall be provided for door locks.

6. Locksets throughout shall be lever type of same manufacture.

C. Exit Devices:

1. Unless otherwise specified, exterior doors shall be furnished with rim touch bar device; right hand reverse active leaf - night latch function by cylinder by hardened cylinder ring by flush pull by sex nut and bolt. Left-hand reverse inactive leaf - exit only by flush pull by sex nut and bolt.

2. Unless otherwise specified, interior doors shall be furnished with rim touch bar device; right hand reverse active leaf-lever handle by cylinder, left hand reverse inactive leaf; exit only.

3. Fire labeled exit devices shall conform to UL label requirements and be listed by the California State Fire Marshal.

4. Exit devices throughout shall be touch bar types of same manufacture. Exit devices shall meet ANSI BHMA, A153.3 Grade 1.

5. Lever design shall match lock levers.

6. Exit devices shall be furnished sized for the specific door width and height.

D. Door Closers:

1. Door closers shall conform to ANSI A156.4, Grade 1, CBC 1133B.2.5.

2. Door closers shall be heavy duty, rigid parallel arm; provide regular arm for regular bevel doors.

3. Door closer shall be full rack and pinion type, adjustable back check, and sweep and latch speed with key regulating screws.

4. Door closer shall have full fitted cover of plastic or stainless steel, attached to door closer body with tamperproof screws.

5. Provide spacer block or support bracket for securing fifth screw on closer arm shoe. Provide special brackets, shoes, or other attachment devices as required.

6. Maximum pressure to operate doors shall not exceed following:

a. Fire rated doors: The authority having jurisdiction may determine the maximum force, not to exceed 15.0 pounds to operate fire doors to achieve positive latching.

b. Exterior doors: 5.0 pounds.

c. Interior doors: 5.0 pounds.

7. Door closers shall be installed at the following:

a. Exterior doors.

b. Fire rated doors.

E. Protection Plates: Furnish kick plates of 10-inch high by 2-inch less door width on single doors, 10-inch high by 1 inch less door width on pairs of doors. Provide one plate for push side of closer-equipped doors.

1. Kick shall be a minimum 0.050 inch thick; Type 304 stainless steel, with finished beveled edges (B4E).

F. Stops:

1. Floor stops shall be mounted to protect door and trim.

2. Furnish stop of appropriate height, minimum ¾ inch above undercut of door.

3. Where the specified floor stop cannot be installed or would present a pedestrian hazard, omit and furnish a heavy-duty overhead stop (626 finish); if closer is specified, furnish closer with integral spring-cushion stop arm.

G. Weather stripping/Gasketing:

1. Install gaskets and intumescent seals on fire rated doors and frames.

2. Unless otherwise specified, install weather stripping on doors from air-conditioned spaces to the exterior: fastener-applied frame seals, nylon-brush door sweeps, and, at pairs, astragals.

H. Thresholds: Unless otherwise specified, thresholds shall conform to CBC Chapter 11B accessibility standards.

I. Push Plates: Plates shall be 0.050 thick, 6-inch by 16-inch minimum, with beveled edges.

1. Door Pulls: Pulls shall have protective plate mounted under pull, 0.050 inches thick, 4-inch by 16-inch beveled on four edges.

2. Hardware Cutouts: Pull plates and push plates installed over locking hardware shall have cylinder and turn lever cutouts as required.

J. Automatic Flush Bolts:

1. Strike plates for automatic bolts shall be provided for active door.

2. Provide dust proof strikes for bottom bolts.

K. Coordinators:

1. Provide brackets as required for items fastened to coordinators.

2. Provide door strike plates for both doors with coordinators.

L. Fasteners: Shall match finish of hardware. Provide fasteners for all hardware at electrical room and exterior doors: stainless steel for chrome, aluminum, or stainless finish hardware; brass or bronze for brass or bronze finish hardware.

2.02 FINISH

A. Unless otherwise specified, finish of hardware shall be dull chromium-plated BHMA 652 for steel-based metals, BHMA 626 for brass-based metals, except for kickplate, escutcheons, push plates, lock strike plates, and exit device touch bars, which shall be BHMA 630. Levers for locksets and exit devices shall be BHMA 626.

B. Unless otherwise specified, overhead door closers and brackets shall be BHMA 689, to match other finish hardware in same room or space.

2.03 CYLINDERS AND KEYING

A. Project shall be keyed in accordance with keying schedule, prepared and furnished by the Owner's Representative.

B. Provide a cylinder security collar at each exterior door cylinder. Provide cylinder collars and spacers at all cylinders as needed to provide a neat, tight and secure fit of the cylinder to the locking hardware.

C. Permanent Cylinders:

1. Permanent cylinders shall be standard core type, 7-pins maximum.

   a. Permanent cylinders as manufactured by Schlage shall be Owner furnished. The Work of this section includes obtaining the permanent cylinders from the Owner, and pinning, stamping, and installing.

   b. Provide to the Owner's Representative an approved hardware schedule and floor plans. Owner's Representative shall return with keying added to the approved hardware schedule, bitting chart, and a complete sample set of permanent keys.

2. Permanent cylinders shall be pinned with third-party (e.g., "LAB") 0.005 inch increment pins.

3. Pin cylinders according to Owner's Representative furnished sample set of permanent keys, Owner's Representative -furnished bitting chart and Owner's Representative -furnished key schedule.

4. Change keys and master keys shall operate inside and outside cylinder on two cylinder locks, unless otherwise indicated.

5. Provide the set number of change key only stamped on cylinder faces.

D. Key Control:

1. Permanent cylinders and sample set of permanent keys shall be not used during the construction phase of the Project. Temporary construction cylinders and keys used

for securing the Work is included as part of the Work of this section and will not be provided by the Owner.

2. Upon Substantial Completion of the Work, sample set of original keys shall be returned to the Owner's Representative. Duplication of Owner keys, or retaining keys, is not permitted.

3. Provide four unstamped, uncut nickel silver key blanks per cylinder to the Owner's Representative prior to Substantial Completion. Key blanks shall be by the permanent cylinder manufacturer and of the same keyway as the sample set of permanent keys or keyway designated by Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Finish hardware shall be installed as specified in Finish Hardware Schedule.

1. Placement of Hardware: Finish hardware shall be installed as indicated on hardware placement sheets attached to end of this section.

2. Provide necessary screws, bolts, anchors, and fastenings, of required sizes and type for proper installation of hardware. Exposed screws shall have Phillips heads, and wood screws shall be fully threaded.

3. Fitting: Hardware shall be accurately fitted and, with exception of prime-coated butt hinges, bar-type coordinators, and flat astragals, shall be removed before finish painting is installed. Upon completion of finish painting and/or sealing, permanently install the hardware.

4. Door escutcheons and push plates shall be installed with stainless steel or bronze, oval, "Phillips Head", fully threaded screws, not less than 3/4 inch - No. 6.

5. Exit devices shall be mounted with non-ferrous sex nuts and fully threaded machine screws, except where through bolts engage outside trim of locking case.

6. Mullion strike shall be installed with fully threaded machine screws.

7. Door closer shall be installed for maximum degree of opening of each door.

8. Following shall be installed with sex nuts and fully threaded machine screws.

   a. Door closers.

   b. Door pulls.

9. Install exterior doorstops as required. On new concrete, stops shall be installed with 1/4-20 screws. Anchor plate shall be Trimco 1268, or equal. Floor stops shall not be located in the path of travel and shall be located no more than 4 inches from walls.

10. Kickplate:

    a. Kickplates shall be installed with screws at each corner, and screws evenly spaced along each side not more than 3 inches apart on centers.

    b. Except on wood doors, screws shall be undercut pan head.

11. Thresholds shall be installed with 1/4-20 screws, set in Pour-Roc or mastic per section 07 9200, and coped to trim.

12. Sound Seals and Weather stripping / Gasketing:

    a. A mounting screw shall be installed within 2 inches of cuts or corners of weather stripping and/or gasketing.

    b. Sound seals and weather stripping and/or gasketing shall be installed with No. 8 - 3/4 inch Tek Phillips pan head screws.

3.02 ADJUSTING AND CLEANING

A. Before Substantial Completion, hardware shall be cleaned and inspected. Where hardware is deemed defective, repair or replace as required.

B. Door Closers: Final adjustments shall be performed before Substantial Completion, with mechanical system balanced and in operation.

3.03 EXAMINATION

A. Upon completion of installation, verify correct installation of hardware, according to reviewed Hardware Schedule and Keying Schedule. Verify that finish hardware is in optimum working condition.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. Locksets, exit devices, and other hardware items are referenced in the following hardware sets for series, type and function. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Do not order material until submittal has been reviewed, stamped, and signed by Architect's door hardware consultant.

C. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

3.06 LIST OF FINISH HARDWARE

Hardware Group No. 1

For use on Door #(s):
MP-4AA MP-4BA

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY		628	IVE
1	EA	REMOVABLE MULLION	KR4954		689	VON
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-EO		626	VON
1	EA	PANIC HARDWARE	CDSI-PA-AX-98-NL-OP-110MD		626	VON
1	EA	MULLION STABILIZER	154		SP28	VON
1	EA	MULLION STORAGE KIT	MT54		689	VON
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
1	EA	MORTISE CYLINDER	MATCH EXISTING (MULLION)			SCH
2	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 DT		630	IVE
1	EA	DOOR PULL	VR910 NL		630	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH		689	LCN
2	EA	PA MOUNTING PLATE	4040XP-18PA AS REQ		689	LCN
2	EA	BLADE STOP SPACER	4040XP-61 AS REQ		689	LCN
2	EA	CUSH SHOE SUPPORT	4040XP-30 AS REQ		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	WEATHER STRIPPING	BY DR/FR SUPPLIER			
2	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

5" MINIMUM STILE REQUIRED FOR HARDWARE SPECIFIED

Hardware Group No. 2

For use on Door #(s):
MP-1BA MP-1CA

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		628	IVE
1	EA	PANIC HARDWARE	CDSI-PA-AX-35A-NL-OP-388		626	VON
1	EA	RIM CYLINDER	MATCH EXISTING			SCH
1	EA	MORTISE CYLINDER	MATCH EXISTING (DOGGING)		626	SCH
1	EA	DOOR PULL	VR910 NL		630	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH		689	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA AS REQ		689	LCN
1	EA	BLADE STOP SPACER	4040XP-61 AS REQ		689	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30 AS REQ		689	LCN
1		SEALS	BY DOOR MANUFACTURER			B/O
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	102A OR PER SILL DETAIL		A	ZER

FIELD VERIFY NEW HARDWARE IS COMPATIBLE WITH DOOR/FRAME CONDITIONS PRIOR TO PLACING ORDER

END HARDWARE SCHEDULE

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
   1. Windows and doors.

1.3 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300.

1.5 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

C. Qualification Data: For installers.

D. Product Test Reports: For each types of glazing products specified.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Source Limitations for Glass: Obtain glazing products through one source from a single manufacturer for each glass type as practical.

C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

D. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.
   1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

E. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
   1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
   2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

F. Safety Glazing Products: Comply with requirements in CBC Section 2406.1.
   1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the manufacturer acceptable to authorities having jurisdiction, in compliance with CBC Section 2406.3.
   2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. GANA Publications:
      a. GANA's "Glazing Manual."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Manufacturers: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vitro. (formally PPG) (Basis of Design).
   2. Guardian.
   3. Pilkington.
   4. Visteon.
   5. Or equal.

2.2 GLASS PRODUCTS

A. Heat-Treated Float Glass (Safety Glass): ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
   1. For uncoated glass, comply with requirements for Condition A.
   2. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
   3. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated.
      a. Class II tempered safety glazing per CBC 2406.3 and Table 2406.2(1).

2.3 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of material complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

2.4 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:
   1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.5 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive.

2.6 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.7 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep system.
   3. Minimum required face or edge clearances.
   4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant where indicated.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 LOCK-STRIP GASKET GLAZING

A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system, unless otherwise indicated.

3.8 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

DIVISION 9

FINISHES

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Interior gypsum board.

B. Related Sections include the following:
   1. Division 9 Section "Tiling" for tile backer board installed as substrates for ceramic tile.
   2. Division 9 Section “Painting” for primers and finishes applied to gypsum board surfaces.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
   2. Finishes: Level 4 and 5 of gypsum board finish indicated for use in exposed locations. 4 by 4 foot sample.
      a. Finishes: For each finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
      b. Each finish indicated.
      c. Each areas such as walls, ceilings, and soffits.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gypsum board that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Interior Gypsum Board: Subject to compliance with requirements, provide products by one of the following:
   1. Georgia Pacific. (District Standard)
   2. USG Corporation.
   3. National Gypsum Company.
   4. Or equal.

B. Steel Trim Accessories: Subject to compliance with requirements, provide products by one of the following:
   1. USG Corporation.
   2. Amico.
   3. Or equal.

2.2 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.

B. Type X:
   1. Thickness: 5/8 inch for new work.
   2. Long Edges: Tapered.
   3. Products:
      a. Toughrock Fireguard X by Georgia Pacific.
      b. Type X by USG.
      c. Or equal.

C. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.
   1. Core: 5/8 inch, Type X.
   2. Use: Toilet rooms and janitor's closets walls with painted finish.
      a. DensArmor Interior Guard by Georgia Pacific.
      b. USG Mold Tough Firecode Core Gypsum Panels by USG.
      c. XP Wallboard by National Gypsum.
      d. Or equal.

2.4 TRIM ACCESSORIES

A. Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:
      a. Cornerbead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.
      g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim and Reveal: As specified in Division 9 Section "Portland Cement Plaster".

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Acoustical Sealant: Sheetrock Acoustical Sealant by USG or equal.
   1. Sealants shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.

D. Thermal and Acoustical Insulation: As specified in Division 7 Section "Building Insulation."

E. Gypsum Board Adhesives:
   1. High performance latex-based construction adhesive designed for gypsum board applications.
   2. Adhesives shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1168.
   3. Products:
      a. Green Series SW-325 Shear & Drywall Adhesive by OSI.
      b. Drywall Adhesive GDWA by Grabberman.
      c. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners, unless otherwise indicated.
   2. LC-Bead: Use at exposed panel edges.
   3. L-Bead: Use where indicated.
   4. U-Bead: Use at exposed panel edges.
   5. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.4 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Comply with GA 214 for Level definitions.
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for ceramic tile or acoustical tile.
   3. Level 3: Where indicated on Drawings.
   4. Level 4: At panel surfaces that will be exposed to view with flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.
   5. Level 5: At panel surfaces that will be exposed to view with non-flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Ceramic tile.
   2. Cementitious backer units installed as part of tile installations.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

1.4 SYSTEM DESCRIPTION

A. Accessibility Requirements for Tile Flooring:
   1. Ceramic and Quarry Tile Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
   1. Propose locations of expansion, contraction, control, and isolation joints if not indicated on Drawings.

C. Installation Method: Show TCA installation method number for each tiled area in tabulated form.

D. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

E. Product Certificates: For each type of product, signed by product manufacturer.

F. Qualification Data: For Installer.

G. Material Test Reports: For each tile-setting and -grouting product.

1.6 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.
   1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

D. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of ceramic tile and accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceramic Tile: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Daltile; Div. of Dal-Tile International Inc.
   2. Crossville Ceramics Company, L.P.
   3. Interceramic.
   4. Bedrosians.
   5. Emser Tile.
   6. Or equal.

B. Setting, Grouting Materials: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. Custom Building Products.
   2. LATICRETE International Inc.
   3. MAPEI Corporation.
   4. Sienna.
   5. Tec by H.B. Fuller.
   6. Or equal.

C. Sheet Waterproofing for Tile Installation: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Noble Company (The); Nobleseal TS. (Basis of Design)
   2. Schluter; KERDI XL.
   3. Or equal.

D. Cementitious Backer Board: Subject to compliance with requirements, provide products by one of the following manufacturers.
   1. USG Corporation; DUROCK Cement Board.
   2. National Gypsum Company; PermaBase.
   3. C-Cure; C-Cure Board 990.
   4. Custom Building Products; Wonderboard.
   5. Or equal.

E. Metal Edge Strips and Transitions: Subject to compliance with requirements, provide products by one of the following manufacturers.

1. Schluter Systems (Basis of Design).
2. Blanke.
3. Or equal.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

C. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 TILE PRODUCTS

A. Semi-Gloss Ceramic Wall Tile: Semi Gloss Series.

B. Color: As selected by Architect from manufacturer’s full range.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
   1. Vendor: White Georgia Marble Co.
   2. Description: Match Architect's sample.

2.5 SHEET WATERPROOFING FOR TILE INSTALLATIONS

A. General: Manufacturer's standard product that complies with ANSI A118.10.

B. Thin (1/32 inch) bonded, load bearing sheet membrane for waterproofing. Alloy made from Chlorinated Polyethylene (CPE) with nonwoven fabric laminated to both sides.
   1. System Performance: 1-14 “Extra Heavy Service” cycles per ASTM C627.
   2. Hardness: 82 shore A per ASTM D2240.
   3. Tensile Strength: 1600 psi per ASTM D412 Die C.
   4. Elongation: 44% per ASTM D412 Die C.
   5. Tear Strength: 400 psi per ASTM D624 Die C.
   6. Shear Strength: Pass per ANSI A118.10-1993.
   7. Shear Strength - Water Immersion: Pass per ANSI A118.10-1993.

8. Fungus & microorganism Resistance: Pass per ANSI A118.10-1993.
9. Seam Strength: Pass per ANSI A118.10-1993.
10. Waterproofness: Pass per ANSI A118.10-1993.

C. Product: Ditra XL System by Schluter or equal.
1. Description: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on underside; 5/16-inch nominal thickness.
2. Accessories:
a. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness. Kerdi-Band and Kerdi-Flex by Schluter or equal.

2.6 SETTING AND GROUTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:
1. Prepackaged dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive.
a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
2. Products:
a. MAPEI: Ultraflex 2, Walls: MAPEI Ultralite.
b. 254 Platinum by Laticrete.
c. Custom Building Products: MegaFlex.
d. Or equal.

B. Chemical-Resistant, Water-Cleanable, Grouting Epoxy: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
1. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F and 212 deg F, respectively, and certified by manufacturer for intended use.
2. Products:
a. MAPEI: Kerapoxy IEG.
b. SpectraLock Pro by Laticrete.
c. Custom Building Products: 100% Solids Epoxy Grout.
d. Or equal.

2.7 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section "Joint Sealants."
1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.8 TILE BACKER UNITS

A. Cementitious Back Units:
   1. Aggregated portland cement board with coated glass-mesh reinforcement scrim.
   2. Comply with ANSI A118.9.
   3. Pass ASTM E136 for non-combustibility.
   4. Thickness: As indicated on Drawings.
   5. Lengths: Maximum lengths available to minimize end-to-end butt joints.

2.9 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.10 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
      a. Sub-floor and Vertical Surfaces: 1/4 inch in 10 feet.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
   1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
   2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Locate joints in tile surfaces directly above joints in concrete substrates.

G. Grout tile to comply with requirements of the following tile installation standards:
   1. For chemical-resistant epoxy grouts, comply with ANSI A108.6.

3.4 CEMENTITIOUS BACKER UNIT INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 WATERPROOFING INSTALLATION

A. Do not install tile over waterproofing until waterproofing has been tested to determine that it is watertight.

3.6 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

B. Joint Widths: 1/16 inch unless specified otherwise.

3.7 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

3.8 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove epoxy grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.9 WALL TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior wall installation over cementitious backer units; thin-set mortar; TCA W244C-07 with epoxy grout and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

3.10 FLOOR TILE INSTALLATION, TCNA ASSEMBLY

A. Tile Installation: Interior floor installation on waterproof membrane over concrete; thin-set mortar; TCNA F122 and ANSI A108.5.
   1. Mortar: Latex-portland cement mortar.
   2. Grout: Chemical-resistant, water-cleanable, tile-grouting epoxy.

END OF SECTION 093000

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes acoustical tiles for ceilings and the following:
   1. Direct attachment of tiles to substrates with adhesive.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light-Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For components with factory-applied color finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
   1. Acoustical Tile: Set of full-size Samples of each type, color, pattern, and texture.
   2. Concealed Suspension System Members: 12-inch- long Sample of each type.
   3. Exposed Moldings and Trim: Set of 12-inch- long Samples of each type and color.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical tile ceiling.

E. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:
1. Surface-Burning Characteristics: Provide acoustical tile with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
a. Smoke-Developed Index: 450 or less.
b. Flame-Spread Classification: CBC 802.2 and Table 8-A.
1) Flame-Spread Rating: Class 1 (0-25).

D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand meeting the requirements of ASCE 7 Section 13.5.6.2 as modified by 2019 CBC Section 1617A.1.21.

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical tile ceilings that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acoustical Tiles: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. USG Interiors, Inc. (District Standard)

2.2 ACOUSTICAL TILES, GENERAL

A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
   1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

D. Antimicrobial Fungicide Treatment: Provide acoustical tiles with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

A. Products: Match existing acoustical panels as approved by Architect.

2.4 MISCELLANEOUS MATERIALS

A. Tile Adhesive: Type recommended by tile manufacturer, bearing UL label for Class 0-25 flame spread.
   1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, DIRECTLY ATTACHED ACOUSTICAL TILE CEILINGS

A. Adhesive Installation: Install acoustical tile by bonding to substrate, using amount of adhesive and procedure recommended in writing by tile manufacturer, CISCA Ceiling System Handbook and as follows:
   1. Remove loose dust from backs of tiles by brushing and prime them with a thin coat of adhesive.
   2. Install splines in joints between tiles; maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet and not exceeding 1/4 inch cumulatively.
   3. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.
   4. Do not bend tile during installation. The "spring load" will cause the adhesive to release.

B. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.

C. Arrange directionally patterned acoustical tiles as follows:
   1. As indicated on reflected ceiling plans.

3.4 CLEANING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Luxury Vinyl Tile (LVT).
   2. Resilient wall base and accessories.

B. Related Sections include the following:
   1. Division 7 Section “Concrete Moisture and Alkalinity Testing” for concrete surface testing.
   2. Division 7 Section “Concrete Moisture and Alkalinity Barrier” for concrete surface preparation.

1.3 PERFORMANCE REQUIREMENTS

A. Accessibility Requirements for Resilient Flooring:
   1. Resilient Flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include concrete moisture and alkalinity limits.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification:
   1. Full-size units of each color and pattern of resilient floor tile required.
   2. Resilient Wall Base and Accessories: Manufacturer's standard-size Samples, but not less than 12 inches long, of each resilient product color and pattern required.

D. Maintenance Data: For resilient products to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store tiles on flat surfaces.

1.7 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

E. Install resilient products after other finishing operations, including painting, have been completed.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of resilient floor tile that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
   2. Resilient Wall Base and Accessories: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Luxury Vinyl Tile (LVT): Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Mohawk Group. (District Standard)

B. Type TP Resilient Wall Base: Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
   1. Johnsonite. (Basis of Design)
   2. Burke Mercer Flooring Products.
   3. Allstate Rubber.
   4. Armstrong.
   5. Or equal.

2.2 LUXURY VINYL TILE (LVT)

A. Product: Mohawk or equal.
   1. Collection and Style: As indicated on Drawings.
   2. Construction: Commercial luxury vinyl tileclass / ASTM F1700 class III, type B.
   3. Edge profile: square.
   4. Installation: direct glue.
   5. Recommended adhesive: Shaw 4100, s150 or Shaw 4151.
   6. Performance and Testing:
      a. Static load (ASTM F970): Passes (modified), *1000 PSI.
      b. Residual indentation (ASTM F1914): Passes.
      c. Resistance to heat (ASTM F1514): Passes.
      d. Resistance to light (ASTM F1515): Passes.
      e. Resistance to chemicals (ASTM F925): Passes.
      f. Smoke density (ASTM E662, flaming mode): Passes.
      g. Radiant panel (ASTM E648): Passes, class I.

2.3 RESILIENT WALL BASE

A. Product: Type TP Perceptions Resilient Wall Base by Johnsonite or equal.
   1. Manufactured from a proprietary thermoplastic rubber formulation.
   2. Meets performance requirements for ASTM F 1861 Standard Specification for Resilient Wall Base, Type TP, Group 1.
   3. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm2 or greater, Class I.
   4. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class A, Smoke <450.
   5. Thickness: 1/8" (3.2mm).
   6. Style and Colors: As selected by Architect from manufacturer's full range.

2.4 RESILIENT MOLDING ACCESSORY

A. Types:
   1. Reducer strip for resilient floor covering
   2. Joiner for tile and carpet.

B. Material: Rubber.

C. Profile and Dimensions: As indicated.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed resilient tile and as recommended/ required by the manufacturer for warrantee acceptance or provided by resilient tile manufacturer for the type of carpet being installed.
   1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. VCT and Asphalt Tile Adhesives: 50 g/L.
      b. Cove Base Adhesives: 50 g/L.
      c. Rubber Floor Adhesives: 60 g/L.

C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Concrete Substrates:

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Independent moisture and alkalinity testing prior to installation of resilient flooring as specified in Division 7 Section "Concrete Moisture and Alkalinity Testing".
3. Provide barrier as specified in Division 7 Section "Concrete Moisture and Alkalinity Barrier" if test exceed floor covering limits.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
1. Do not install resilient products until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

D. Extend tiles into toe spaces, door reveals, closets, and similar openings.

E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

F. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
   2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.5 RESILIENT ACCESSORY INSTALLATION

A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.6 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.
      a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
   1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
      a. Use commercially available product acceptable to manufacturer.
   2. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 096519

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Surface Preparation.
   2. Field application of paints, stains, varnishes, and other coatings.

1.3 SUBMITTALS

A. Product data - Submit product data sheets for each product.

B. Samples:
   1. Submit two painted samples, illustrating selected colors and textures for each color and systems selected with specified coats cascaded.
   2. Submit on suitable backing, 8x10 inch size.

1.4 QUALITY ASSURANCE

A. Painting Contractor is required to attend a pre-construction meeting with the District prior to commencement of all projects.

1.5 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

C. Environment Requirements:
   1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.
   2. Do not paint when there is a threat of rain within 24 hours or when surface or air temperatures are at or below 40 degrees.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace paint that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

1.8 EXTRA STOCK

A. Minimum 1 gallon each product in original or new 1 gallon cans.
   1. Color spot each lid.
   2. Identify with formula, location, product and date.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paints: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Vista Paint. (District Standard)

2.2 PAINTS AND COATINGS

A. Ready mixed, except field-catalyzed coatings.

B. Prepare pigments:
   1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogenous coating.
   2. For good flow and brushing properties.
   3. Capable of drying or curing free of streaks or sags.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Do not proceed unless substrate is suitable.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent
   3. Interior Wood: 15 percent, measured in accordance with ASTMD4442.
   4. Exterior Wood: 15 percent, measured in accordance with ASTMD4442.

3.2 PREPARATION OF SURFACE

A. General:
   1. Clean all exterior walls and surfaces of loose and scaly paint, dirt, dust, chalk, and other foreign matter by water-blasting using care not to damage substrate followed by hand scraping, sanding or wire brushing after surfaces are dry. Mildew must be treated with household bleach solution and rinsed thoroughly.
   2. Patch, caulk, set protruding nails and repair all surfaces and cracks where necessary with suitable patching materials and smooth off to match adjacent surfaces.
   3. Sand Glossy surfaces to dull surface and remove residue.
   4. Remove mildew from affected surfaces with a solution of Tri-Sodium Phosphate and bleach. Rinse with clean water and allow to dry completely.
   5. Existing surfaces to be recoated shall be thoroughly cleaned and de-glossed by sanding or other means prior to priming and painting. Patched and bare areas shall be spot primed with the same primer as specified for new work.
   6. Rusty metal: Scrape, sand or wire wheel, feathering edges to sound coating. Dust surfaces. Topcoat.
   7. Remove soil and body oils completely from surfaces, including handrails, door edges and posts. Treat with Liquid Sandpaper or Dull-N-Bond.
   8. Remove hardware, accessories, plates, fixtures and similar items not to be finished. Reinstall at completion.
   9. Paint edges of sink cut-outs.

B. CMU Surfaces:
   1. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete block surfaces which are to be painted.
   2. Unpainted CMU surfaces shall be cleaned with TSP. Rinse thoroughly. Surface shall be tested for adhesion. Prime as listed in materials section; allow to cure, then perform adhesion test with duct tape.

C. Galvanized Surfaces: Remove all oils and contamination from galvanized surfaces scheduled to be painted by washing with a compliant solvent wash.

D. Ferrous Metal: Remove grease, rust, scale, dirt and dust from ferrous metal surfaces. Primer coat shall be applied not less than 30 minutes, nor more than 3 hours after preparation of surface.

E. Primed Metal: Sand and scrape shop primed metal to remove loose primer and rust. Touch-up bare, abraded and damaged areas with metal primer. Feather edges to make touch-up patches inconspicuous.

F. Wood Surfaces:
   1. Remove dust, grit and foreign matter from wood surfaces. Sand surfaces and dust clean. Spot prime knots, pitch streaks and sappy sections with a stain blocking primer where surfaces are to be painted. Fill nail holes, cracks and other defects after priming and spot prime repairs after patching material has fully cured.
   2. Wood surfaces with peeling areas are to have edges of broken paint film sanded to a feather edge.
   3. Back prime wood trim. Paint tops, bottoms, edges and cut-outs of doors.

G. Plaster Surfaces:
   1. Plaster surfaces shall be dry and free from efflorescence, encrustations and foreign matter. Fill cracks, holes and imperfections, smoothing repairs to match adjacent texture. Allow repairs to fully cure before priming.
   2. Prime plaster surfaces with specified primer. Caulk all cracks.

H. Gypsum Board: Gypsum board shall be dusted clean and free from encrustations and other foreign matter.

I. Preparation of other surfaces shall be performed following specific recommendations of the coating manufacturer.

3.3 PREVISOUSLY COATED SURFACES

A. Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required per ASTM D4259.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved

E. Sand wood surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust particles just prior to applying next coat.

G. Stipple all edges and corners to conceal brush marks.

H. Paint entire trim element with like color. Painting of faces only is unacceptable. Trim surfaces must be wrapped with the trim color and not "faced off" or "Hollywooded".

I. Doors: Paint entire door unless otherwise noted, including door top and bottom edge surfaces.

J. Tinting: Tint each primer a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint primer to match the color of the finish coat, but provide sufficient differences in shade of primer to distinguish each separate coat.

3.5 PROTECTION

A. Protect work of other trades and items not intended to receive paint. Install "wet paint" signs to protect newly painted surfaces.

3.6 CLEANING

A. Protection - Carefully protect areas where work is in progress from damage.
   1. Provide and spread clean drop cloths when and where required to provide the necessary protection.
   2. Immediately clean-up all accidental spatter, spillage, misplaced paint and restore the affected surface to its original condition.

B. Clean-up:
   1. Clean up debris daily per OSHA requirements.
   2. At completion of work, remove all materials, supplies, debris and rubbish and leave each area in a clean, acceptable condition.
   3. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.7 SURFACES TO BE FINISHED

A. Paint all new work and areas affected by new work, unless noted otherwise.

B. Do not paint or finish the following items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.

C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint shop primed items occurring in finished areas.
   3. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint.
   4. Paint dampers exposed behind louvers, grilles and convector and baseboard cabinets to match face panels.

3.8 PAINT SYSTEMS – EXTERIOR

A. CONCRETE – PLASTER – STUCCO
   1. FLAT: Premium Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 3000 Acribond (100% Acrylic Solid Stain)
      c. Third Coat 3000 Acribond (100% Acrylic Solid Stain)
   2. FLAT ELASTOMERIC: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 500 Solotex Multi-Mil Acrylic Elastomeric
      c. Third Coat 500 Solotex Multi-Mil Acrylic Elastomeric
   3. EGGSHELL ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
   4. SEMI-GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
      c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   5. GLOSS ENAMEL: Premium Plus Quality
      a. First Coat 4600 Uniprime II (100% Acrylic Primer)
      b. Second Coat 8500 Carefree Gloss (100% Acrylic)
      c. Third Coat 8500 Carefree Gloss (100% Acrylic)

B. METAL: FERROUS (Unprimed)
   1. FLAT: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 2000 Duratone (100% Acrylic)
      c. Third Coat 2000 Duratone (100% Acrylic)
   2. EGGSHELL ENAMEL : Water-based Acrylic : Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
      c. Third Coat 8300 Carefree Eggshell (100% Acrylic)
   3. EGGSHELL ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
      a. First Coat 9600 Protec Metal Primer
      b. Second Coat 9700 Protec Alkyd Emulsion Satin
      c. Third Coat 9700 Protec Alkyd Emulsion Satin
   4. SEMI-GLOSS ENAMEL: Water-based Acrylic: Premium Plus Quality
      a. First Coat 9600 Protec Metal Prime
      b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)

c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)

5. SEMI-GLOSS ENAMEL: Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9800 Protec Alkyd Emulsion Semi-Gloss
   c. Third Coat 9800 Protec Alkyd Emulsion Semi-Gloss
6. GLOSS ENAMEL : Water-based Acrylic: Premium Plus Quality
   a. First Coat 9600 Protec Metal Prime
   b. Second Coat 8500 Carefree Gloss (100% Acrylic)
   c. Third Coat 8500 Carefree Gloss (100% Acrylic)
7. GLOSS ENAMEL : Water-based Alkyd Emulsion: Premium Plus Quality
   a. First Coat 9600 Protec Metal Primer
   b. Second Coat 9900 Protec Alkyd Emulsion Gloss
   c. Third Coat 9900 Protec Alkyd Emulsion Gloss

C. METAL: NON-FERROUS (Unprimed)
1. FLAT: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 2000 Duratone (100% Acrylic)
   d. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro Primer
   c. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   d. Third Coat 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   d. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS: Premium Plus Quality
   a. Pre-Treatment: Krud KutterMetal Clean & Etch
   b. First Coat 4800 Metal Pro White Primer
   c. Second Coat 8500 Carefree Gloss (100% Acrylic)
   d. Third Coat 8500 Carefree Gloss (100% Acrylic)

D. WOOD
1. FLAT: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 2000 Duratone (100% Acrylic)
   c. Third Coat 2000 Duratone (100% Acrylic)
2. EGGSHELL ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8300 Carefree Eggshell (100% Acrylic)
   c. Third Coat: 8300 Carefree Eggshell (100% Acrylic)
3. SEMI-GLOSS ENAMEL: Premium Plus Quality
   a. First Coat 4200 Terminator II (100% Acrylic Primer)
   b. Second Coat 8400 Carefree Semi-Gloss (100% Acrylic)
   c. Third Coat 8400 Carefree Semi-Gloss (100% Acrylic)
4. GLOSS ENAMEL: Premium Plus Quality

a. First Coat 4200 Terminator II (100% Acrylic Primer)
b. Second Coat 8500 Carefree Gloss (100% Acrylic)
c. Third Coat 8500 Carefree Gloss (100% Acrylic)

E. CONCRETE – ASPHALT – LINE STRIPING
1. FLAT:
a. First Coat 6700 ON-LINE Flat Traffic Marking Paint
b. Second Coat 6700 ON-LINE Flat Traffic Marking Paint
2. SEMI-GLOSS ENAMEL:
a. First Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
b. Second Coat 6800 ON-LINE Semi-Gloss Traffic Marking Paint
3. FLAT W/ REFLECTIVE BEADS: QUICK-DRY
a. First Coat 6900 ON-LINE Flat QD Traffic Marking Paint
b. Second Coat 6900 ON-LINE Flat QD Traffic Marking Paint

3.9 PAINT SYSTEMS – INTERIOR (Premium Low or Zero VOC)

A. Gypsum Board Surfaces (Drywall) Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

B. Gypsum Board Surfaces (Drywall) 100% Acrylic Low-Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

C. Gypsum Board Surfaces (Drywall) 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

D. Gypsum Board Surfaces (Drywall) 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

E. Concrete, Plaster, Masonry – Acrylic Flat Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

F. Concrete, Plaster, Masonry – 100% Acrylic Low Sheen Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

G. Concrete, Plaster, Masonry – 100% Acrylic Eggshell Finish
1. First Coat: 7001 Acriglo Primer

2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

H. Concrete, Plaster, Masonry – 100% Acrylic Semi-Gloss Finish
1. First Coat: 7001 Acriglo Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

I. Concrete Masonry Unit (CMU) Acrylic Flat Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7100 Acriglo Flat Finish
3. Third Coat: 7100 Acriglo Flat Finish

J. Concrete Masonry Unit (CMU) 100% Acrylic Low Sheen Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

K. Concrete Masonry Unit (CMU) 100% Acrylic Eggshell Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

L. Concrete Masonry Unit (CMU) 100% Acrylic Semi-Gloss Finish
1. First Coat: 040 Acrylic Block Filler
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

M. Wood – 100% Acrylic Low-Sheen Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 1750 Acriglo Velva Sheen Finish
3. Third Coat: 1750 Acriglo Velva Sheen Finish

N. Wood – 100% Acrylic Eggshell Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7500 Acriglo Eggshell Finish
3. Third Coat: 7500 Acriglo Eggshell Finish

O. Wood – 100% Acrylic Semi-Gloss Finish
1. First Coat: 4200 Terminator II Primer
2. Second Coat: 7000 Acriglo Semi-Gloss Finish
3. Third Coat: 7000 Acriglo Semi-Gloss Finish

P. Metal: Ferrous – Water Base Alkyd Semi-Gloss Finish
1. First Coat: 9600 Protec Alkyd Emulsion Metal Primer
2. Second Coat: 9800 Protec Semi-Gloss Finish
3. Third Coat: 9800 Protec Semi-Gloss Finish

Q. Metal: Non-Ferrous (Galvanized) Water Base Alkyd Semi-Gloss Finish
1. Pretreatment: Krud Kutter Metal Clean and Etch

2. First Coat: 4800 Metal Pro Acrylic Metal Primer
3. Second Coat: 9800 Protec Semi-Gloss Finish
4. Third Coat: 9800 Protec Semi-Gloss Finish

3.10 COLORS

A. To be selected by Architect from manufacturer's full range of colors.

END OF SECTION 099100

DIVISION 10

SPECIALTIES

SECTION 101100 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Markerboards.
   2. Tackboards.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Show location of panel joints.
   2. Show location of special-purpose graphics for visual display surfaces.
   3. Include sections of typical trim members.

C. Schedule: List product, size, and type by room numbers.

D. Samples for Initial Selection: For each type of visual display surface indicated and as follows:
   1. Actual sections of face sheet and tack assembly.
   2. Samples of accessories involving color selection.

E. Samples for Verification: For each type of visual display surface indicated and as follows:
   1. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
   2. Trim: 6-inch- long sections of each trim profile.
   3. Accessories: Full-size Sample of each type of accessory.

F. Maintenance Data: For visual display surfaces to include in maintenance manuals.

G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of visual display surfaces and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

B. Fire-Test-Response Characteristics: Provide fabrics with the surface-burning characteristics indicated, as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-built visual display boards, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store visual display units vertically with packing materials between each unit.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating visual display surfaces without field measurements. Coordinate wall construction to ensure that actual dimensions correspond to established dimensions.
   2. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.7 WARRANTY

A. Special Warranty for Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace face sheets that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Surfaces lose original writing and erasing qualities.
      b. Surfaces become slick or shiny.
      c. Surfaces exhibit crazing, cracking, or flaking.
   2. Warranty Period: Life of the building.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Markerboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. LCS Markerboard by Claridge Products & Equipment, Inc. (Basis of Design).
   2. 555 Series, P3 ceramic steel by Polyvision Corporation.
   3. Magnaboard by Chatfield Clarke Co.
   4. Modular Trim System by Platinum Visual Systems.
   5. A-1 Visual Systems.
   6. Best-Rite.
   7. Or equal.

B. Tackboard: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Koroseal. (District Standard)

2.2 MARKERBOARDS

A. Product: Markerboard by Claridge Products & Equipment, Inc.
   1. Face Sheet: 24 gauge, white.
      a. LCS-II, 75 low gloss; dry-erase markers wipe clean with dry cloth or standard eraser. Suitable for use as projection screen.
   2. Core Material: 7/16” MDF unless fire retardant materials are required, then provide 7/16 inch Duracore.
   3. Panel Backing: Moisture barrier back; 0.002” Aluminum Foil Panel.
   4. Metal Frame/Trim: Series #4, 5/8 inch trim face.
      a. Extruded aluminum, alloy 6063, clear anodized finish.
      b. Trim for three sides: Side trim with narrow leg exposed and mitered at corners.
      c. Chalk trough: Outer end corners rounded to approximately 1-1/2 inches radius.
   5. Size: As indicated on Drawings.
   6. Maprail: 74EZ, 2 inch.

2.3 TACK BOARD

A. Product: tac•wall by Koroseal or equal.
   1. Description: Resilient, tackable, linoleum surface material. Uni-color resilient homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing.
   2. Width: 48 inch.
   3. Gauge: 1/4 inch.
   4. Roll: Approximately ± 95 lineal foot rolls.
   5. Flexible enough to bend around a 2-3/4 inch radius.
   6. Dimensionally stable due to burlap backing.
   7. Meets California Indoor Air Quality Specifications 01350.
   8. Color: Color shall extend through thickness of material.

a. As selected by Architect from manufacturer's full range.
9. Size: As indicated on Drawings.

B. Aluminum Trim: 1/4 inch clear satin, anodized aluminum.
1. 5/16 inch face J Trim.
2. 1/2 inch face H Trim.
3. 5/16 inch face Outside Trim.
4. 5/16 inch face Inside Trim

C. Accessories:
1. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) or polyvinyl acetate dispersion type (contact adhesive) when used in a press.
2. Caulk: Color matched to tackable wall.

2.4 ACCESSORIES

A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- thick, extruded aluminum; of size and shape indicated.
1. Factory-Applied Trim: Manufacturer's standard.

B. Chalktray: Manufacturer's standard, continuous.
1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.

C. Map Rail: Provide the following accessories:
1. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches wide.
2. End Stops: Located at each end of map rail.
3. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches of map rail or fraction thereof.
4. Flag Holder: One for each room.

2.5 FABRICATION

A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.

B. Visual Display Boards: Factory assemble visual display boards, unless otherwise indicated.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.

3. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

D. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to neat, hairline closure.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.6 ALUMINUM FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

D. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Examine walls and partitions for proper backing for visual display surfaces.

C. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.

B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.

3.3 INSTALLATION, GENERAL

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation. Units shall be braced in place to allow curing of adhesive. There shall be no gaps or voids in adhesion and units shall not give when pushed.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

A. Visual Display Boards: Visual Display Boards shall be attached to the wall by spreading adhesive over the entire back of the panel with 1/4 inch notched trowel. Panels shall be braced to provide thorough adhesion to the substrate, and shall exhibit no “sponginess” when pressed.

3.5 CLEANING AND PROTECTION

A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 101100

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Panel signs (room signs).
   2. Parking signs.
   3. Traffic signs.
   4. Exterior building signs.
   5. Signage accessories.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Raised characters shall comply with CBC Section 11B-703.2.:
      a. Depth: It shall be 1/32 inch (0.8 mm) minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
      b. Height: It shall be 5/8 inch (15.9 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter “I”. CBC Section 11B-703.2.5.
      c. Finish and contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1
      d. Proportions: It shall be selected from fonts where the width of the uppercase letter “O” is 60 % minimum and 110 % maximum of the height of the uppercase letter “I”. Stroke thickness of the uppercase letter “I” shall be 15 % maximum of the height of the character. CBC Sections 11B-703.2.4.
      e. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8.
      f. Braille: It shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4. Braille dots shall have a domed and rounded shape and shall comply with CBC Table and Figure 11B-703.3.1.
      g. Mounting height: A tactile sign shall be located 48” minimum to the baseline of the lowest Braille cells and 60” maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
      h. Mounting location: A tactile sign shall be located on the approach side, as one enters or exits rooms or space, and be reached within 0” of the required clear floor space per CBC Section and Figure 11B -703.4.2 as follows:

1) a clear floor space of 18' x 18" minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
2) on the wall at the latch side of a single door.
3) on the inactive leaf of a double door with one active leaf.
4) on the wall at the right side of a double door with two active leafs.
5) on the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leafs.

2. Visual characters shall comply with CBC Section 11B-703.5 and shall be 40" minimum above finish floor or ground.
3. Pictograms shall comply with CBC Section 11B-703.6.
4. Symbol of accessibility shall comply with CBC Section 11B-703.7.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
1. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.

D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:
1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will not be returned for installation into Project.

E. Qualification Data: For Installer.

F. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.

B. Source Limitations: Obtain each sign type through one source from a single manufacturer.

C. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

D. All tactile signage must be field inspected after installation per CBC 11B-703.1.1.2.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
   1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signage fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Best Sign Systems Inc. (Basis of Design)
   2. Apco Graphics Inc.
   3. ASI Sign Systems, Inc.
   4. Curcio Enterprises, Inc.
   5. Mohawk Sign Systems.
   6. Sign A Rama.
   7. Or equal.

B. Exterior Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Gemini, Inc. (Basis of Design)
   2. A.R.K. Ramos Mfg. Co., Inc.
   3. La Haye Bronze.
   4. Metal Arts; Division of L & H Mfg.
   5. Mills Manufacturing. Inc.
   6. Southwell Co.
   7. Or equal.

2.2 PANEL ROOM SIGNS

A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
   1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.

B. Product: HC300 ADA Sign System by Best Sign Systems.
   1. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished.
   2. No Smoking signs.
   3. Room, Occupancy, Wayfinding Signs: As selected from 4 standard copy size signs.
      a. 4" x 2" with up to 4 characters each.
      b. 6" x 2" with up to 8 characters each.
      c. 8" x 2" with up to 12 characters each.
      d. 10" x 2" with up to 14 characters each.
   4. Toilet Room Signs: As selected from manufacturer's standard.
   5. Symbols of Accessibility: Provide 6-inch- high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.
   6. Material:
      a. 1/4 inch thick (thicker than standard) "MP", acrylic sheet, ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
   7. Copy: Contracted grade 2 Braille all capital letter on tactile sign.
      a. Font and Size: As indicated on Drawings.

2.3 PARKING/TRAFFIC SIGNS

A. Material: 0.080" porcelain-enameled aluminum unframed signs, screen printed copy.

B. Accessible signs are blue with white symbol.
   1. Text: Symbols of accessibility, accessible direction, etc. as indicated on Drawings.
   2. Text: Stop, Yield, Do Not Enter, etc. as indicated on Drawings.

C. Post: 2 inch diameter, schedule 40 galvanized pipe.

2.4 EXTERIOR BUILDING SIGN

A. Cast metal letters: Melted metal alloy poured into a mold. The backside is hollow.

B. Size and letters: As indicated on Drawings.

2.5 ACCESSORIES

A. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
   2. Signs placed on glazed surfaces, backing sign of the same material and color shall be applied on the opposite glazed surface.

B. Wall-Mounted Panel Signs:
   1. Interior Signs on Smooth Substrates:
      a. Silicone-Adhesive Mounting: Use liquid-silicone adhesive recommended in writing by sign manufacturer to attach signs to irregular, porous, or vinyl-covered surfaces.

Use double-sided vinyl tape where recommended in writing by sign manufacturer to hold sign in place until adhesive has fully cured.

2. Exterior and Interior Signs on Rough Substrates:
   a. Mechanical Fasteners: Mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
      1) Fastener: Stainless steel screws, tamper-resistant flat head countersink.
      2) Anchors: Suitable for secure attachment to substrate.

C. Parking and Traffic Signs
   1. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
   2. Install sign level, plumb, and at height indicated.
   3. Cap post with galvanized cap.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by District.

END OF SECTION 101400

SECTION 102800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Toilet accessories.

B. Owner-Furnished Contractor Install Materials: As indicated on Drawings.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Elements of Sanitary facilities shall be mounted at locations in compliance with CBC Sections 11B-602 through 11B-612.
   2. Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609.
   3. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follows:
      a. 1-1/2” between the grab bar and the wall.
      b. 1-1/2” minimum between the grab bar and projecting objects below and at the ends.
      c. 12” minimum between the grab bar and projecting objects above.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
   1. Identify locations using room designations indicated on Drawings.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in California Electrical Code, NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace toilet and bath accessories that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Toilet and Bath Accessories: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Bobrick Washroom Equipment, Inc. (District Standard)

B. Underlavatory Guards: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Handy-Shield by Plumberex Specialty Products, Inc. (Basis of Design)
   2. IPS Corp.
   3. TCI Products.
   4. Truebro, Inc.
   5. Or equal.

2.2 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.

C. Galvanized Steel Sheet: ASTM A 653, with G60 hot-dip zinc coating.

D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.3 TOILET ACCESSORIES

A. As indicated on Drawings.

2.4 UNDERLAVATORY GUARDS

A. Product: Handy-Shield Maxx by Plumberex Specialty Products, Inc. or equal.
   1. Description: Insulating pipe covering for supply and drain piping assemblies, that prevent direct contact with and burns from piping, and allow service access without removing coverings.
   2. PVC insulator shall be 1/8" thick.
   3. Meets Testing Standard ASTM E 84-07 per CBC Chapter 8.
      a. 25 flame spread.
      b. 450 smoke index.
   4. Surfaces to be soft, smooth, non-absorbent, easy to clean U/V inhibited, antimicrobial, antifungal properties.
   5. Insulator shall have a dual fastening system which consists of fusion bonded Velcro fastener strips for full slit enclosure and tamper resistant, smooth, non-abrasive snap-locking fasteners.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate OFCI items with District.

B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

C. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 104400 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable fire extinguishers.
   2. Fire-protection cabinets for the following:
      a. Portable fire extinguishers.
   3. Mounting brackets for fire extinguishers.

1.3 SYSTEM DESCRIPTION

A. Fire Extinguisher Cabinets:
   1. Fire Extinguisher Cabinets must comply with CBC Sections11B-305, 11B-307, 11B-308, and 11B-309.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.
   1. Fire Extinguishers: Include rating and classification.
   2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Samples for Initial Selection: For fire-protection cabinets with factory-applied color finishes.

C. Samples for Verification: For each type of exposed factory-applied color finish required for fire-protection cabinets, prepared on Samples of size indicated below.
   1. Size: 6 by 6 inches square.

D. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10-1998 Edition, "Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
   1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure of hydrostatic test according to NFPA 10.
      b. Faulty operation of valves or release levers.
   2. Warranty Period: 6 years.

B. Installer Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fire Extinguishers and Cabinets: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. JL Industries, Inc. (Basis of Design)
   2. Larsen's Manufacturing Company.
   3. Potter Roemer; Div. of Smith Industries, Inc.
   4. Ansul.
   5. Or equal.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B.

B. Stainless-Steel Sheet: ASTM A 666, Type 304.

C. Tempered Break Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick minimum.

2.3 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
   1. Valves: Manufacturer's standard.
   2. Handles and Levers: Manufacturer's standard.
   3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
   4. Certification Tag: Provide fire extinguisher with valid certification test tag where fire extinguishers are fully charged and ready to be used.

B. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-10B:C, UL rated.
   2. Nominal Capacity: Provide largest capacity fire extinguisher that will fit in the cabinet, but 5 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: General purpose.

C. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class 2A-20B:C.
   2. Nominal Capacity: Provide largest capacity fire extinguisher but 10 lbs. minimum.
   3. Finish: Baked enamel, red color.
   4. Use: At mechanical rooms and where indicated.

D. Wet Chemical Type: Cast steel tank, pressurized, including hose and nozzle, with bracket.
   1. Class 2A-K.
   2. Size 2.5 gal.
   3. Finish: Factory baked enamel, red color.
   4. Use: At kitchens.

2.4 FIRE-PROTECTION CABINET

A. Product: Cosmopolitan series - stainless steel fire extinguisher cabinet by JL.
   1. Door and Trim Construction: No. 4 stainless steel. Flush cabinet doors with a 5/8" door stop are attached by a continuous hinge and equipped with zinc-plated handle and roller catch.
   2. Trim Style and Depth: Provide semi-recessed where recessed can’t be provided.
      a. Recessed: 3/8" flat trim.
      b. Semi-Recessed: 1-1/4", 1-1/2" Square Edge or 2-1/2", 3", 4" (recessed pull), 4-1/2" Rolled Edge.
   3. Finish: #4 Stainless Steel.
   4. Tub: Constructed of cold rolled steel with white powder-coat finish standard. Surface mount tubs are No 4 stainless.
   5. Fire-Rated: At fire-rated assembly.
   6. Door Styles: View Door Styles at Right.
   7. Door Glazing: Tempered Glass.

2.5 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   1. Color: Red.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter.
      a. Orientation: Vertical.

2.6 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
   1. Weld joints and grind smooth.
   2. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material.
      a. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
   1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
   2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 STAINLESS-STEEL FINISHES

A. General: Remove tool and die marks and stretch lines or blend into finish.
   1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Bright, Directional Polish: No. 4 finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where cabinets will be installed.

B. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged units.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for recessed and semi-recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights indicated on Drawings.

B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
   1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire-protection cabinets.
   2. Provide inside latch and lock for break-glass panels.
   3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104400

DIVISION 11
EQUIPMENT

SECTION 115217 - ASSISTIVE LISTENING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Portable listening system.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Assistive-listening systems shall be provided in accordance with CBC Section 11B-219 and shall comply with CBC Section 11B-706.
   2. The minimum number of receivers to be provided shall be equal to 4% of the total number of seats, but in no case less than two. 25 % minimum of the receivers provided, but no less than two, shall be hearing-aid compatible in accordance with CBC Section 11B-706.3.
   3. If the system provided is limited to specific areas or seats, then such areas or seats shall be within a 50-foot viewing distance of, and have a complete view of, the stage or playing area. CBC Section 11B-219.4.
   4. Provide system with standard mono jacks; hearing aid compatible receivers with neckloop; sound pressure level 110 dB min to 118 dB max, volume control 50dB; signal-to-noise ratio min; peak clipping level max relative to peaks of speech per CBC 11B-706.

1.4 SUBMITTALS

A. Product Data: For portable listening system.

B. User manual: For transmitters and receivers.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain portable listening devices through one source from a single manufacturer.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of assistive listening devices that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Portable Listening System: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Williams Sound. (Basis of Design)
   2. Telex.
   3. Listen Technologies.
   4. Chaparral.
   5. Or equal.

2.2 PORTABLE LISTENING SYSTEM

A. Product: FM ADA Kit 37 FM ADA Compliance Kit by Williams Sound or equal.
   1. Transmitter:
      a. Battery powered and capable of being worn, 60 hours of operation with alkaline batteries, 30 hours with rechargable batteries
      b. 16 selectable channels on FM frequencies between 72 and 76 MHz
      c. Frequency Response: 200Hz to 13kHz
      d. Connector: 3.5mm accepts input from microphone and line level signals
      e. Controls: On/Off, Volume, Mute button with indicator, Channel selector
      f. Internal compression to reduce peak distortion and noise
   2. Receivers:
      a. Battery powered and capable of being worn, 50 hours of operation with alkaline batteries, 32 hours with rechargable batteries.
         1) Enters sleep mode if no RF signal detected for 6 minutes
      b. Channels: 17 between 72 and 76 MHz
         1) Unit shall have ability to lock channel to prevent accidental change of channel
      c. Deviation: 75kHz
      d. De-Emphasis: 75µS
      e. Range: AFC Range ±120kHz
      f. Sensitivity: 2µV @ 12dB Sinad with Squelch Defeated
      g. Max Input Signal: 100mV
      h. Frequency Response 200Hz - 15kHz
      i. Modulation FM, ±75kHz Peak Deviation
      j. Signal to Noise Ratio 65dB Min @ 100µV
      k. Output Level 35mW Max, Peak into 16 Ohms
      l. Connectors 3.5mm Stereo/Mono Headphone Jack
   3. Headphones: Heavy duty, folding, mono.

a. Drivers 1.6" (40 mm)
b. Plug 3.5 mm mono
c. Cord 39" (99 cm)
d. Nominal Impedance 16 Ohms
e. Frequency Response 20 Hz - 20 kHz
f. Maximum Input 100 mW
g. Sensitivity 96 dB @ 1 kHz

4. Lapel Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
5. Desktop Conference Microphone:
   a. Element: Electret condenser
   b. Pickup Pattern: Omni-directional
   c. Impedance: 1.5 kOhms
   d. Frequency Response 20 Hz to 18 kHz
   e. Dynamic Range 79 dB
   f. Sensitivity -56 dB (±3 dB)
   g. Signal-to-Noise Ratio (SNR) 63 dB
   h. Plug: 3.5 mm
   i. Cable Length 3.3' / 1.0 m
6. Neckloops: designed to magnetically couple an audio signal to a telephone coil-equipped (T-Switch) hearing aid.
   a. Magnetic Field Strength: 25 mW input at 1000 Hz produces 1.7 A/m 6" above the center of loop 85µW input produces 0.1 A/m (IEC Standard)
   b. Input Power: 500 mW max
   c. Impedance 8 to 16 Ohms
   d. Connector: 3.5 mm mono mini-plug
7. System Carry Case: Heavy-duty carrying case lined with foam and capable of containing entire system.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Store portable listening system as directed by District.

3.2 DEMONSTRATION

A. Engage a factory-authorized service representative to train District's maintenance personnel to adjust, operate, and maintain portable listening system. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION 115217

DIVISION 12

FURNISHINGS

SECTION 122116 - VERTICAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Vertical louver blinds.

1.3 PERFORMANCE REQUIREMENTS

A. Operable parts and controls at unobstructed forward and side approach locate at 48" to top of device. For reach requirements at other conditions, comply with 11B-308 as they apply. Operable parts shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist and shall have a maximum operable force of 5 pounds. Operable parts shall also comply with CBC sections 11B 308.2, 11B 308.3. and 11B-309.4.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for vertical louver blinds.

C. Samples for Initial Selection: For each type of vertical louver blind indicated.
   1. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For each type of vertical louver blind indicated.
   1. Vane: Not less than 12 inches long.
   2. Vertical Louver Blind: Full-size unit, not less than 16 inches wide by 24 inches long.

E. Window Treatment Schedule: For vertical louver blinds. Use same designations indicated on Drawings.

F. Product Certificates: For each type of vertical louver blind, signed by product manufacturer.

G. Maintenance Data: For vertical louver blinds to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain vertical louver blinds through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide vertical louver blinds with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Flame-Resistance Ratings: Passes NFPA 701.

C. Product Standard: Provide vertical louver blinds complying with WCSC A 100.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver vertical louver blinds in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install vertical louver blinds until construction and wet and dirty finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where vertical louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of vertical louver blinds that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Vertical Louver Blinds: Before installation begins, for each size, color, texture, pattern, and gloss indicated, full-size units equal to 5 percent of amount installed, but no fewer than 2 units.
2. Vanes: Before installation begins, furnish quantity of full-size units equal to 5 percent of amount of each type, color, and size installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Vertical Louver Blinds:
1. Hunter Douglas.
2. Levolor, a Newell Rubbermaid Company.
3. Or equal.

2.2 VERTICAL LOUVER BLINDS, ALUMINUM VANES

A. Rail System: Headrail.
1. Rails: Extruded aluminum; long edges returned or rolled; channel-shaped, enclosing operating mechanisms.
   a. Anodized aluminum, clear anodized.
2. Wheeled Carriers: Engineered plastic with self-lubricating wheels.

B. Vanes: Aluminum, alloy, and temper recommended by producer for type of use and finish indicated; with crowned profile and not less than 3/8-inch overlap when vanes are rotated fully closed.
1. Nominal Vane Width: 3-1/2 inches wide.
2. Vane Finish: One color as indicated.

C. Vane Directional Control: Manual with nickel-plated metal bead chain.

D. Traversing Control: Manual with nickel-plated metal bead chain.

E. Louver Bottom: Connecting or spacing chains.

F. Mounting: As indicated on Drawings.

G. Stack Release: Permitting stacked vanes to be moved away from stacking position for total access to glazed opening.

H. Colors, Textures, Patterns, and Gloss: As selected by Architect from manufacturer's full range.

2.3 VERTICAL LOUVER BLIND FABRICATION

A. Product Description: Vertical louver blind consisting of equally spaced, synchronized vanes and rail system with self-aligning carrier mechanisms, carriers, traverse and vane directional mechanisms and controls, and installation hardware.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.
   1. Louver Directional and Traversing Control Mechanisms: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:
   1. Blind Units Installed between (inside) Jambs: Width equal to 1/4 inch per side or 1/2 inch total less than jamb-to-jamb dimension of opening in which each blind is installed. Length equal to 1/4 inch, plus or minus 1/8 inch, less than head-to-sill dimension of opening in which each blind is installed.

D. Installation Brackets: Designed for easy removal and reinstallation of blind, for supporting headrail and operating hardware, and for hardware position and blind mounting method indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to blind hardware and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, unless anodized or plated finish is indicated. Apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install vertical louver blinds level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior vane edges in any position are not closer than 2 inches to interior face of glass. Install intermediate support as required to prevent deflection in headrail. Allow clearances between adjacent blinds and for operating glazed opening's operation hardware, if any.

3.3 ADJUSTING

A. Adjust vertical louver blinds to operate smoothly, easily, safely and free of binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean vertical louver blind surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that vertical louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged vertical louver blinds that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122116

SECTION 126815 – FOLDING TABLES AND BENCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Folding table and bench seats.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Provide folding tables and bench seats with integral wall pockets with unitized understructure not requiring the tops of benches for operation.

B. Performance Requirements: Bench undercarriage shall be able to support 200 lbs. at any point when top panels are removed.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.
   1. Supply information for each type of on-wall or in-wall table/seating system specified, including detail of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Maintenance data for built-in table/seating systems, including a detailed operation and maintenance manual.

C. Shop Drawings: Show fabrication and installation of built-in table/seating, including plans, elevations, sections, details of components, profiles and finishes.

D. Samples:
   1. For initial selection in the form of manufacturer's color charts consisting of actual units or sections of the units showing the full range of colors, textures and patterns available for each exposed material involving color selection.
   2. For verification of the following items, provide samples from the same material to be used for the work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
      a. High-pressure plastic laminate.

E. Quality Assurance/Control Submittals: Submit the following:

1. Certificates: Manufacturer certification of qualifications of firms or persons specified in the "Quality Assurance" article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses of Architects and Owners as well as other information specified.

F. Closeout Submittals: Submit the following:
1. Warranty documents specified herein.

1.5 QUALITY ASSURANCE

A. Qualifications:
1. Installer Qualifications: Engage an experienced installer who has specialized in installing built-in tables and seating similar to those required for this project and who is acceptable to and certified by the manufacturer of the built-in table/seating system to perform the work of this section.
2. Welder Qualifications: Engage certified welders that have satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, have undergone recertification.

1.6 DELIVERY, STORAGE & HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature/ humidity conditions recommended by the manufacturer.

1.7 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.
1. Warranty Coverage: To include replacement or repair of any defect in the original material and workmanship, including welds, pockets, tables and benches.
2. Warranty Period: 15 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wall-Mounted Tables and Benches:
1. Mitchell Furniture Systems.(Basis of Design)
2. Palmer Hamilton

3. Biofit Engineered Products.
4. Sico.
5. Or equal.

2.2 WALL-MOUNTED TALBES AND BENCHES

A. Wall-mounted tables and benches by Mitchell or equal.
1. Model: D-08-13-2812-S.
2. Description: Double-depth in-wall, recessed mounted pockets.
3. 13’ L x 28 inches W x 29 inches H tables per in-wall pocket unit.
4. Quantity: As indicated on Drawings.
5. Top Surface: Wilsonart Laminate.
   a. Color as selected by Architect.
6. Edge Color: Black.
7. Finish: Power coat, jet black.
8. ADA seating where required.

2.3 FABRICATION

A. Comply with applicable provisions of AWS D1.1 and AWS D1.3.

PART 3 - EXECUTION

3.1 MANUFACTURER’S INSTRUCTIONS

A. Comply with the instructions and recommendations of the bench and table manufacturer.

3.2 EXAMINATION

A. Site Verification of Conditions:
1. With general contractor present, examine area where built-in tables and seating are to be installed.
2. Ensure compliance with installation tolerance requirements and other conditions affecting performance of built-in tables and seating.
3. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Protection: Protect previously installed finish materials from damage during installation of benches and tables.

B. Preparation: Make actual field measurements of construction affecting built-in tables and seating prior to fabrication and show record measurements on-shop drawings.

3.4 INSTALLATION

A. Installation must be done over a level surface with no more than a .125" (3 mm) change in height over a 10' (3 m) area.

B. Install built-in tables and seating to comply with manufacturer's instructions, shop drawings and specifications.

C. Provide accessories indicated, including anchors, fasteners, inserts, and other hardware required for installing and attaching units to adjoining construction.

D. Secure sill level on floor with flat-head screws through each hole provided by the manufacturer using lead or patent type anchors for screws in concrete floors. Install screw heads flush with sill.

E. Seven-foot center-to-center pocket mounting distance is the suggested minimum for 26" (660 mm) aisles between table/bench seats.

F. Height of finished floor must be within .0625" (1.5mm) of top of pocket sill plate. Rough floor to wall must be perpendicular in pocket mounting area.

3.5 ADJUSTING

A. Touch up shop applied finishes to restore damaged or soiled areas.

B. Lubricate, test and adjust each built-in table and seating unit to operate easily/comply with manufacturer's

3.6 CLEANING

A. After installation/adjustment: clean exposed and partially exposed surfaces on each installed built-in table, seating unit, and wall pocket. Use materials and methods recommended by manufacturer.

3.7 DEMONSTRATION

A. Demonstrate and train owner's maintenance personnel on procedures and schedules related to operation, troubleshooting, servicing, inspection, and maintenance.

3.8 PROTECTION

A. Protect installed built-in tables and seating units from damage during subsequent construction.

B. Ensures table and seating units are without damage or deterioration at the time of substantial completion.

END OF SECTION 126815

DIVISION 22

PLUMBING

SECTION 22 05 18- ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this

and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.13 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated and rough-brass finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Chrome-Plated Piping: One-piece, cast-brass type with polished, chrome-plated finish.
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
e. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.
f. Bare Piping in Equipment Rooms: One-piece, cast-brass type with polished, chrome-plated or rough-brass finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 22 05 18

SECTION 22 05 23- GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Bronze ball valves.
2. Ductile-iron, single-flange butterfly valves.
3. Bronze lift check valves.
4. Bronze swing check valves.
5. Bronze gate valves.
6. Iron gate valves
7. Manual circuit balancing valves.
8. Gas shut-off cocks.
9. LPG shut-off cocks.

B. Related Sections:

1. Division 2 water distribution piping Sections for general-duty and specialty valves for site construction piping.
2. Division 15 plumbing piping Sections for specialty valves applicable to those Sections only.
3. Division 15 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene diene terpolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Nonrising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

G. SWP: Steam working pressure.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be

neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61-G and NSF-372 for valve materials for potable-water service.

1. Valves for domestic water must comply with the Federal Reduction of Lead in Drinking Water Act.
   a. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%.
   b. All valves must be 3rd party certified.
   c. Bronze valves shall be made of dezincification-resistant material.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set angle, gate, and globe valves closed to prevent rattling.
4. Set ball and plug valves open to minimize exposure of functional surfaces.
5. Set butterfly valves closed or slightly open.
6. Block check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and

sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Piping systems shall be supplied with valves arranged so as to give complete and regulating control of each building and piping systems throughout the building, and located so all parts are easily accessible and maintained.

1. Valve Design: Rising stem or outside screw and yoke stems. Non-rising stem valves may be used where space conditions prevent full extension of rising stems.
2. Sizes: Same size as upstream pipe, unless otherwise indicated.
3. Extended stems: Where piping insulation is indicated or specified, valves shall be equipped with 2” extended handles of non-thermal conductive material. Also provide a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Supply with memory stops, which are fully adjustable after insulation is applied.
4. End Connection: 2 inch and under shall be threaded, 2-1/2 inches and larger shall be flanged or full lug style.

C. Valves for Potable Water must comply with California Lead Free Law, effective January 1, 2010.

1. "Lead Free" refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%. Source: California Health & Safety Code (116875).
2. All valves must be 3rd party certified.
3. Bronze valves shall be made with dezincification-resistant material.

D. Where possible, valves of one manufacturer shall be used.

E. Provide Class 150 valves meeting the valve specifications where Class 125 valves are specified but are not available.

F. Bronze valves shall be made with dezincification-resistant materials, (Bronze ASTM B62, B61, or B584 Alloy C87850). This includes body, ball, stem and / or trim.

G. Bronze Valves: NPS 2 and smaller with threaded ends, unless otherwise indicated.

H. Ferrous Valves: NPS 2-1/2 and larger with flanged ends, unless otherwise indicated.

I. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

J. Valve Sizes: Same as upstream piping unless otherwise indicated.

K. Valve Actuator Types:

1. Hand-wheel: For valves other than quarter-turn types.
2. Hand-lever: For quarter-turn valves NPS 6 and smaller.

L. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.

a. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Nib-seal handle extension or comparable product by one of the following:

b. General valves:

1) NIBCO
2) Hammond
3) Milwaukee

c. Below grade domestic water shut-off valves (gate valves) 2" and larger:

1) NIBCO.
2) Clow.
3) Mueller.

d. Butterfly Valves:

1) NIBCO.
2) Demco.
3) Dezuric.

e. Plug Valves:

1) Hammond.
2) Milwaukee.

f. Check valves, lift type:

1) Hammond.
2) Milwaukee.

g. Below grade backwater valve isolation valves:

1) NIBCO.
2) Clow.
3) Mueller.

2. Butterfly Valves: With extended neck.

M. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
2. Grooved: With grooves according to AWWA C606.
3. Solder Joint: With sockets according to ASME B16.18.
4. Threaded: With threads according to ASME B1.20.1.

N. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES

A. Three-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-595-Y-66-LF or T-595-Y-66-LF or a comparable product by one of the following,

a. Milwaukee Valve Company.
b. Apollo.

2. Description:

c. Standard: MSS SP-110, NSF 61-G.
d. CWP Rating: 600 psig.
e. Body Design: Three piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
f. Body Material: Bronze ASTM B 584 Alloy C87850 or C87600.

g. Ends: Threaded or Solder.
h. Seats: PTFE or TFE.
i. Stem: 316 Stainless steel.
j. Ball: 316 Stainless steel, vented.
k. Port: Full.

B. Two-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim & Nib-Seal Handle:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-585-66-LF or T-585-66-LF or a comparable product by one of the following:

a. Conbraco Industries, Inc.; Apollo Div.
b. Milwaukee Valve Company.

2. Description:

a. Standard: MSS SP-110, NSF 61-G.
b. CWP Rating: 600 psig.
c. Body Design: Two piece with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
d. Body Material: Bronze ASTM B 584 Alloy C87600.
e. Ends: Threaded or Solder.
f. Seats: PTFE or TFE.
g. Stem: 316 Stainless steel.
h. Ball: 316 Stainless steel, vented.
i. Port: Full.

C. 200 CWP, Sizes 2-1/2" – 24", Ductile Iron, Single-Flange Butterfly Valves with EPDM Seat and Aluminum-Bronze Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model LD-2000-3/5, or a comparable product by one of the following:

a. Cooper Cameron Corp.; Cooper Cameron Valves Div.
b. Tyco International, Ltd.; Tyco Valves & Controls

2. Description:

a. Standard: MSS SP-67, Type I, IAPMO.
b. NPS 24 (DN 300) and Smaller CWP Rating: 200 psig (1380 kPa).
c. Body Design: Full Lug type; Bubble tight shutoff, suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: ASTM A 536, ductile iron.
e. Seat: EPDM.
f. Stem: One- or two-piece stainless steel.
g. Disc: Aluminum bronze

D. Retain one or more of six paragraphs in this article if iron, single-flange butterfly valves are required. MSS SP-67 covers iron, single-flange butterfly valves NPS 1-1/2 to NPS 72.

2.3 BRONZE LIFT CHECK VALVES

A. Class 125, Lift Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-480-Y-LF or T-480-Y-LF or a comparable product by one of the following:

a. Hammond.
b. Milwaukee.

2. Description:

a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Vertical flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE, or TFE.

2.4 BRONZE SWING CHECK VALVES

A. Class 125, Bronze Swing Check Valves with Nonmetallic TFE Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-413-Y-LF or T-413-Y-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-80, Type 4, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Design: Y-pattern Horizontal flow.
d. Body Material: ASTM B 584 Alloy C87850, lead free bronze.
e. Ends: Threaded or Solder.
f. Disc: PTFE or TFE.

2.5 BRONZE GATE VALVES

A. NRS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-113-LF or T-113-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves.

2. Description:

a. Standard: MSS SP-139, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B 584, dezincification-resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free Silicon Bronze.
f. Disc: Solid wedge; lead free bronze.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron.

B. RS Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model S-111-LF or T-111-LF or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Powell Valves

2. Description:
a. Standard: MSS SP-80, Type 2, NSF 61-G.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B584 C87850 dezincification resistant bronze with integral seat and threaded bonnet.
d. Ends: Threaded or Solder.
e. Stem: Lead free silicon bronze.
f. Disc: Solid wedge, lead free bronze.
g. Packing: Asbestos free.
h. Handwhell: Malleable iron.

2.6 IRON GATE VALVES

A. Class 125, Ductile-Iron Resilient Wedge Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F-619-RWS (NRS) or F-607-RWS (OS&Y) or a comparable product by one of the following:

a. Clow
b. Mueller

2. Description:

a. Standard: AWWA C-509 and C-515,
b. CWP Rating: 300 psig.
c. Body Material: ASTM A-536 ductile iron, fusion-bonded epoxy coating inside and out.
d. Ends: Flanged.
e. Trim: stainless steel.
f. Disc: Rubber encapsulated ductile iron wedge.

g. Packing and Gasket: Asbestos free.

2.7 MANUAL CIRCUIT BALANCING VALVES

A. Bronze, Fixed Orifice, Balancing Valves (2” and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T/S-1810-LF or a comparable product by one of the following:

   a. Or approved equal

2. Description:

   a. CWP Rating: 300 psig
   b. Maximum Operating Temperature: 260°F.
   c. Body Material: Bronze or dezincification-resistant brass, lead free, Y-pattern globe type with fixed orifice (venture) for precise regulation and control. NO QUARTER TURN VALVES WILL BE ACCEPTED.
   d. Plug: Bronze or dezincification-resistant brass with EPDM O-Rings.
   e. Seat: Bronze or dezincification-resistant brass.
   f. Ends: Threaded or Solder.
   g. Pressure Gage Connections: Shall have two metering test ports with internal check and protective caps for use with portable differential pressure metering stations.
   h. Handle Style: Calibrated hand wheel equipped with visual position readout and hidden memory stops for repeatable regulation and control.

B. Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves (2-1/2” and larger):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model F/G 737A or a comparable product by one of the following:

   a. Tour & Andersson

2. Description:

   a. CWP Rating: 240 psig
   b. Maximum Operating Temperature: 250°F.
   c. Body Material: Cast-iron or steel body, globe pattern with calibrated orifice. NO BUTTERFLY VALVES.
   d. Stem Seals: EPDM O-Rings
   e. Disc: EPDM coated cast-iron disc.
   f. Seat: Bronze or dezincification brass.
   g. Ends: Flanged or grooved.
   h. Pressure Gage Connection: Integral seals for portable differential pressure meter.
   i. Handle Style: Calibrated hand wheel equipped with visual position readout and concealed memory stops for repeatable regulation and control.

2.8 GAS SHUT-OFF COCKS:

A. Gas Shut-Off Cocks, Above Grade (4" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-FP-600-A or a comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: CSA certified and UL/FM listed.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full

B. Gas Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

2.9 LPG SHUT-OFF COCKS:

A. LPG Shut-Off Cocks, Above Grade (3" and smaller):

1. Basis-of-Design Product: Subject to compliance with requirements, provide NIBCO Model T-585-70-UL (1/2" – 1") and T-580-70-UL (1-1/4" – 3") or a comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standard: MSS SP-110, CSA certified and UL/FM listed.
   b. CWP Rating: 600 psig.
   c. SWP Rating: 150 psig.
   d. Gas Rating: 250 psi non-shock LP gas per UL842.
   e. Body Design: Two piece with threaded body pack nut design (no threaded stem designs al-lowed) with adjustable stem packing.
   f. Body Material: Dezincification-resistant brass.
   g. Seats: PTFE
   h. Ball: Chrome-plated brass
   i. Ends: Threaded
   j. Port: Full port (1/2" – 1"), conventional port (1-1/4" – 3")

B. LPG Shut-Off Cocks, Below Grade:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nordstom "Poly-Gas" or comparable product by one of the following:

   a. Or approved equal.

2. Description:

   a. Standards: ASTM D-2513 and ANSI B16.40
   b. Valve boxes: cast iron tops marked "GAS", high-impact heavy-duty ABS valve can as manufactured by C.O. Test Services-VALVCO, Inc. or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install check valves for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.
2. Check Valves: In horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, butterfly valves.
2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
3. Throttling Service: Ball or Butterfly valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends.
3. For Steel Piping, NPS 2 and Smaller: Threaded ends.
4. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends.

3.5 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: Threaded ends.
2. Ball Valves: Two piece, full port, bronze with stainless-steel trim.
3. Bronze Lift Check Valves: Class 125, nonmetallic TFE disc.

4. Bronze Swing Check Valves: Class 150, nonmetallic TFE disc.
5. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 and Larger:

1. Ductile-Iron, Single-Flange Butterfly Valves: 200 CWP, EPDM seat, aluminum-bronze disc.

END OF SECTION 22 05 23

SECTION 22 05 29- HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Fastener systems.

B. Related Sections:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.6 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in

walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This

drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.13 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 Pipe Supports: Unless otherwise indicated on the drawings, shall be as follows:

A. The Contractor shall furnish and install all miscellaneous iron work including angles, channels, etc., required to appropriately support the various piping systems. Hanger spacing and location shall conform to 2019 California Plumbing Code Table 313.1.

B. All horizontal runs of piping within the building to be supported from the structural framing with steel rods and split ring hangers, B-Line, Grinnell Company, Tolco, or approved equal. Steel rods shall be secured to overhead framing with side beam connectors. Where necessary, install angle iron between framing to accommodate hanger rods. Where several pipes are running together, Unistrut, B-Line or Powerstrut channels with clamps may be used in lieu of individual pipe hangers, and supported from structure as herein specified. Submit test data for type of hanger supports to be provided. For support conditions other than specified herein, the Contractor shall submit method of support for approval prior to any installation.

C. Horizontal Piping Hangers and Supports:

1. General: Provide factory fabricated horizontal hangers and supports complying with one of the following MSS types listed to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.

   a. Adjustable Steel Clevis Hangers: (MSS Type 1.) B-Line B 3100
   b. Adjustable Swivel Pipe Rings: (MSS Type 5) B-Line B3690

D. Vertical-Piping Clamps:

1. General: Provide factory fabricated vertical-piping clamps complying with the following types listed, to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
2. Two-Bolt Riser Clamps: (MSS Type 8) B-Line B3373

E. Hanger-Rod Attachments:

1. General: Provide factory fabricated hanger-rod attachments B-Line, Tolco or approved equal, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-58 and manufacturer's published product information. Select size of hanger-rod attachment to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.
2. Side beam eye socket, Tolco Fig. #57 for rod sizes 3/8" dia. and Tolco Fig. #25-30-251 for rod sizes 1/2" dia.

F. Building Attachments:

1. General: Provide factory fabricated building attachments, selected by Installer to suit building structural framing conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments for copper-piping systems.

G. Hanger Rods and Spacing shall conform to the following table:

Pipe Sizes	Spacing	Rods
2 Inch and Smaller	6 Feet	3/8 Inch
2-1/2 Inch to 3 Inch	8 Feet	1/2 Inch
4 Inch and larger	8 Feet	5/8 Inch

H. Hangers and Supports shall be adequate to maintain alignment and prevent sagging and shall be placed within 18 inches of joint. Support shall be provided at each horizontal branch connection.

I. Provide lateral bracing as manufactured by B-Line or approved equal for all piping to prevent swaying or movement in accordance with SMACNA "Guidelines for Seismic Restraints of Piping Systems". Piping smaller than indicated in the guidelines shall be provided with bracing as specified for the smallest size indicated. The entire water distribution system shall be properly braced and will not move due to the action of quick closing of valves.

J. Miscellaneous Supports, Wall Brackets, Etc.: Provide where required in accordance with the best standard practices of the trade. Submit shop drawings for all fabricated supports.

2.2 Isolators. All piping which is not isolated from contact with the building by its insulation shall be installed with a manufactured type isolator. Isolators shall be B-Line vibra clamp and cushion, Super Strut, Stoneman "Trisolator", or approved equal. Piping shall be installed and supported in a manner to provide for expansion without strains. Guides shall be properly installed to ensure this requirement.

2.3 Shields:

A. General: Provide shields at piping hangers and supports, factory-fabricated, for all insulated piping as manufactured by Pipeshields Incorporated or approved equal. Size shields for exact fit to mate with pipe insulation.

1. Protection Shields: MSS Type 40; provide high density insert of same thickness of insulation or equal 100-psi average compressive strength, waterproofed calcium silicate, encased with a sheet metal shield. Insert and shield shall cover entire circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

2.4 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.5 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.6 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ERICO International Corporation.
2. PHS Industries, Inc.
3. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
4. Piping Technology & Products, Inc.

B. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig ASTM C 552 or Type II cellular glass with 100-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, stainless- steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.8 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

D. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

L. Insulated Piping:

1. Attach clamps and spacers to piping.

   a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
   b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
   c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Shield Dimensions for Pipe: Not less than the following:

   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.

b. NPS 4: 12 inches long and 0.06 inch thick.

4. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
5. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099123 "Interior Painting."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports metal trapeze pipe hangers and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.

H. Use thermal-hanger shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
4. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. C-Clamps (MSS Type 23): For structural shapes.
6. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
7. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
8. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
9. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
2. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

O. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 22 05 29

SECTION 22 05 53- IDENITIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Valve tags.
5. Warning tags.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

F. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

G. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or self-tapping screws.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: Black.

C. Background Color: White.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

H. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 incheshigh.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.5 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Section 099123 "Interior Painting."

B. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels with painted, color-coded bands or rectangles on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

C. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

D. Pipe Label Color Schedule:

1. Domestic Water Piping:

a. Background Color: White.
b. Letter Color: Black.

2. Sanitary Waste and Storm Drainage Piping:

a. Background Color: White.
b. Letter Color: Black.

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Cold Water: 1-1/2 inches, round.
b. Hot Water: 1-1/2 inches, round.

2. Valve-Tag Color:

   a. Cold Water: Natural.
   b. Hot Water: Natural.

3. Letter Color:

   a. Cold Water: Black.
   b. Hot Water: Black.

3.5 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 22 05 53

SECTION 22 07 19- PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

1. Section 220716 "Plumbing Equipment Insulation."

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.11 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.12 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.17 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.18 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Hot Water Pipe Insulation: All hot water supply and return piping, except exposed connections to plumbing fixtures, flanges and unions shall be insulated with ASTM C547, Class I, "Johns-Manville" "Micro-Lock" 850-APT, Owens-Corning Fiberglass Corp., ASJ/SL-11 or approved equal, 1" thick for sizes up to 2" and 1-1/2" thick for sizes 2" and larger with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Insulation shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC

1. Exposed insulated piping in occupied areas and exposed outside the building shall be covered with Johns-Manville” “Zeston” 30-mil thick white PVC jacketing material per ASTM D1784 with “Johns-Manville” “Zeston” pre-formed insulation inserts for all fittings. Insulation at all fittings shall be equal in thickness to insulation for piping. Jacketing shall comply with ASTM E84, and shall have a flame spread of not more than 25 and a smoke density not exceeding 50 per 2019 CMC.
2. Hot water piping below slab shall have insulation protected by a 10-mil thick polyethylene plastic sleeve sealed watertight with poly vinyl chloride tape.

B. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

E. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

F. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

G. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Johns Manville; Micro-Lok.
b. Knauf Insulation; 1000-Degree Pipe Insulation.
c. Owens Corning; Fiberglas Pipe Insulation.

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

H. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Armacell LLC; Tubolit.
b. Nomaco Insulation; IMCOLOCK and NOMALOCK.

I. All insulation shall be continuous through supports and hangers.

J. All fixtures complying with the provisions of the Americans with Disabilities Act shall be provided with Prowrap insulation for exposed hot water pipe, tailpiece, and trap as manufactured by McGuire, and secured per manufacturers recommendations. No tape wrapping shall be permitted.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
b. Eagle Bridges - Marathon Industries; 225.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-96.
   b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 81-33.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
   b. Eagle Bridges - Marathon Industries; 225.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-20.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Products: Subject to compliance with requirements, provide the following:

   a. Johns Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABI, Ideal Tape Division; 428 AWF ASJ.
b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
c. Compac Corporation; 104 and 105.
d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABI, Ideal Tape Division; 370 White PVC tape.
b. Compac Corporation; 130.
c. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

2.4 SECUREMENTS

A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

2.5 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. McGuire Manufacturing.

2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.

   a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for

above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

B. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be the following:

a. McGuire pre-insulated trap and supply covers.

END OF SECTION 22 07 19

SECTION 22 11 16- DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Under-building-slab and aboveground domestic water pipes, tubes, and fittings inside buildings.
2. Encasement for piping.

B. Related Requirements:

1. Section 221113 "Facility Water Distribution Piping" for water-service piping outside the building from source to the point where water-service piping enters the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.8 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.12 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.13 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

B. Field quality-control reports.

1.14 FIELD CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of water service.
2. Do not interrupt water service without Architect's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61. Plastic piping components shall be marked with "NSF-pw."

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

B. Soft Copper Tube: ASTM B 88, Type K water tube, annealed temper.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

D. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

E. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

F. Piping within the building and above grade shall be Type "L" ASTM B88, hard drawn copper tubing with wrought copper sweat fittings ANSI B16.18 and B16.22,

G. Outdoor underground piping in sizes 2-1/2" and 3" shall be Type "L" ASTM B88, hard drawn copper as specified for water piping within the building. Piping 2" and smaller shall be Type "K" ASTM B88, hard drawn copper with wrought copper sweat fittings ANSI B16.18 and B16.22.

H. Piping below the building floor shall be Type "K" soft annealed copper tubing with no fittings below the slab.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. Full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys.

D. Flux: ASTM B 813, water flushable.

E. Brazing Filler Metals: AWS A5.8/A5.8M, BCP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.4 VALVE ACCESSORIES AND SPECIALTIES

A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. For service shut-off valves on domestic water; for pressure regulator assemblies, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type
2. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.5 CORROSION PROTECTION:

1. General.

   a. Corrosion protection shall be provided for all below grade copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

2. Materials.

   a. Copper piping encasement.

      1) The polywrap shall be minimum 6 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall conform to the requirements of ASTM D1248.

2) The polywrap shall be as manufactured by Northtown Company or approved equal.

b. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
½” to ¾” copper	2”
1” to 1-½ copper	3”
2” copper	4”
2-1/2” copper	5”
3” copper	6”

c. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

1) Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

d. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.

D. Install shutoff valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."

E. Install shutoff valve immediately upstream of each dielectric fitting.

F. Install domestic water piping level without pitch and plumb.

G. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

H. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

I. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

J. Install piping to permit valve servicing.

K. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

L. Install piping free of sags and bends.

M. Install fittings for changes in direction and branch connections.

N. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

O. Install thermometers on outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing Piping."

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

S. Corrosion Protection:

1. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the poly-wrap. The bunched-up poly-wrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the poly-wrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.

2. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.
3. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 2 and Smaller: 72 inches with 3/8-inch rod.
2. NPS 2-1/2 to NPS 3: 8 feet with 1/2-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.5 CONCRETE VAULT INSTALLATION

A. Install precast concrete vaults according to ASTM C 891.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
3. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.7 PIPE AND EQUIPMENT IDENTIFICATION

A. Each operating and service line shut-off valve shall be identified by a 19 ga. brass tag with stamped, engraved type of service identified and area served, complete with hole and brass chain mounted on valve stem or handle. Tag shall be a minimum of one and one-half inch (1-1/2") in diameter.

B. All piping systems shall be readily identifiable by appropriate labeling with the name of the piping contained. Such labeling shall be by means of metal tags, stenciling, stamping, or with

adhesive markers, in a manner that is not readily removable. Labeling shall appear on the piping at intervals of not more than 20 ft and at least once in each room and each story traversed by the piping system.

C. Provide on exterior wall of each building opposite the building's main gas service a sign reading "Gas Shut Off". Sign shall be metal with minimum 1-1/2" high-embossed letters.

1. All equipment shall be provided with name plate indicating all pertinent information on it

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

Schedule of Test Pressures:

System Tested	Gauge	Test	Duration
Water	100 PSI	Water	4 Hours

e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

   a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
   b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

   a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
   b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours. Operate all valves during the retention period.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours. Operate all valves during the retention period.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 OPERATION INSTRUCTION

A. Prior to occupancy or prior to the date of final inspection, whichever may occur first, the Contractor shall prepare two (2) sets of typewritten instructions for the operation of all equipment, valves, etc., specified and furnished as a part of the work under this section, and shall assign a competent person, thoroughly familiar with the job, to demonstrate and instruct a representative of the Owner in the operation of the equipment. The time of said demonstration and instructions shall be arranged with the Owner's representative approximately one (1) week in advance. Verbal instructions shall include shut-off location of gas and water. The Contractor shall assemble all operation and maintenance data supplied by the manufacturers of the various pieces of equipment, all keys and special wrenches required to operate and service the equipment (including keys for yard boxes, gas stops and fixture stops), and all equipment warranties and deliver same to the representative of the Owner on date of said instructions.

3.12 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller, shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

E. Under-building-slab, domestic water piping, NPS 2 and smaller, shall be the following:

1. Soft copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and brazed joints.

F. Aboveground domestic water piping shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and soldered joints.

3.13 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use ball valves for piping NPS 2 and smaller. Use butterfly valves with flanged ends for piping NPS 2-1/2 and larger.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

END OF SECTION 22 11 16

SECTION 22 11 19- DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Balancing valves.
5. Temperature-actuated, water mixing valves.
6. Hose bibbs.
7. Water-hammer arresters.
8. Trap-seal primer valves.
9. Trap-seal primer systems.

B. Related Requirements:

1. Section 223200 "Domestic Water Filtration Equipment" for water filters in domestic water piping.
2. Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.
3. Section 224300 "Medical Plumbing Fixtures" for thermostatic mixing valves for sitz baths, thermostatic mixing-valve assemblies for hydrotherapy equipment, and outlet boxes for dialysis equipment.
4. Section 224500 "Emergency Plumbing Fixtures" for water tempering equipment.
5. Section 224713 "Drinking Fountains" for water filters for water coolers.
6. Section 224716 "Electric Water Coolers" for water filters for water coolers.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the

engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

D. Domestic Water: The Contractor shall be responsible for the domestic water service outside of the building within five feet (5’) of the foundation, and within the building itself. See Civil Engineer’s plans for onsite domestic water system.

E. Domestic Water Service: The Contractor shall arrange with the serving utility company for the installation of all water meter assemblies and reduced pressure backflow devices, including the service mains and vaults, and all required appurtenances as indicated on the drawings and in accordance with serving utility standards and shall pay all costs incurred. All required capacity fees, frontage fees and inspections, shall be paid for by the Owner. Contractor shall provide necessary tap-in connections in water main for sterilizing of domestic water system. Contractor shall connect into the main water service line as indicated on the drawings. The installation shall be in accordance with the serving utility company's standards.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.

3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.14 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.15 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.16 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 and NSF 14.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
   b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1001.
4. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
5. Body: Bronze.
6. Inlet and Outlet Connections: Threaded.
7. Finish: Rough bronze.

B. Hose-Connection Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.
d. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1011.
4. Body: Bronze, nonremovable, with manual drain.
5. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
6. Finish: Rough bronze.

C. Pressure Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Water Technologies, Inc.
b. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1020.
4. Operation: Continuous-pressure applications.
5. Pressure Loss: 5 psig maximum, through middle third of flow range.
6. Size: See plans.
7. Design Flow Rate: See plans.
8. Selected Unit Flow Range Limits: See plans.
9. Accessories:

a. Valves: Ball type, on inlet and outlet.

D. Laboratory-Faucet Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
b. Woodford Manufacturing Company; a division of WCM Industries, Inc.
c. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

3. Standard: ASSE 1035.
4. Size: NPS 1/4 or NPS 3/8 (DN 8 or DN 10) matching faucet size.
5. Body: Bronze.
6. End Connections: Threaded.
7. Finish: Chrome plated.

2.4 OUTLET BOXES

A. Clothes Washer Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. Guy Gray Manufacturing Co., Inc.
   c. IPS Corporation.
   d. Symmons Industries, Inc.
   e. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
   f. Whitehall Manufacturing; a div. of Acorn Engineering Company.
   g. Zurn Industries, LLC; Plumbing Products Group; Light Commercial Products.

3. Mounting: Recessed.
4. Material and Finish: Plastic box and faceplate.
5. Faucet: Combination valved fitting or separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
6. Supply Shutoff Fittings: NPS 1/2 (DN 15) gate, globe, or ball valves and NPS 1/2 (DN 15) copper, water tubing.
7. Drain: NPS 2 (DN 50) standpipe and P-trap for direct waste connection to drainage piping.
8. Inlet Hoses: Two 60-inch- (1500-mm-) long, rubber household clothes washer inlet hoses with female, garden-hose-thread couplings. Include rubber washers.
9. Drain Hose: One 48-inch- (1200-mm-) long, rubber household clothes washer drain hose with hooked end.

B. Icemaker Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Acorn Engineering Company.
   b. IPS Corporation.

3. Mounting: Recessed.
4. Material and Finish Plastic box and faceplate.
5. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 (DN 15) or smaller copper tube outlet.
6. Supply Shutoff Fitting: NPS 1/2 (DN 15) gate, globe, or ball valve and NPS 1/2 (DN 15) copper, water tubing.

2.5 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Include operating key with each operating-key hose bibb.

2.6 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.
   b. Zurn Industries, LLC; Plumbing Products Group; Specification Drainage Products.

2. Standard: ASSE 1010 or PDI-WH 201.
3. Type: Metal bellows.
4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.7 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. MIFAB, Inc.
   b. Precision Plumbing Products, Inc.
   c. Sioux Chief Manufacturing Company, Inc.

2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.8 TRAP-SEAL PRIMER SYSTEMS

A. Trap-Seal Primer Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Precision Plumbing Products, Inc.

2. Standard: ASSE 1044.
3. Piping: NPS 3/4, ASTM B 88, Type L; copper, water tubing.
4. Cabinet: Surface-mounted steel box with stainless-steel cover.
5. Electric Controls: 24-hour timer, solenoid valve, and manual switch for 120-V ac power.

   a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

6. Vacuum Breaker: ASSE 1001.
7. Number Outlets: Four.
8. Size Outlets: NPS 1/2.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water-hammer arresters in water piping according to PDI-WH 201.

B. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

C. Install trap-seal primer systems with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 Access Panels:

A. Wall access panels shall be minimum 12" x 12" for concealed valves and other equipment unless otherwise specified or indicated. Ceiling access panels shall be 18" x 18" minimum. Access panels shall be located and positioned for ready access and service of equipment housed within. Where access panels are specified with keyed cylinder locks, all such locks shall be identically keyed.
   1. Wall, Non-Fire Rated: Elmdor/Stoneman DW-SS-CL, drywall, stainless steel finish, cylinder lock.
   2. Ceiling, Non-fire Rated: Elmdor/Stoneman DW, drywall, prime coated finish, screwdriver latch.

3. Wall, Fire Rated: Elmdor/Stoneman FR-SS-CL, fire rated, stainless steel finish, cylinder lock.
4. Ceiling, Fire rated: Elmdor/Stoneman FRC, Fire rated, prime coated finish, return latch.

3.3 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.4 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
1. Supply-type, trap-seal primer valves.
2. Trap-seal primer systems.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.5 FIELD QUALITY CONTROL

A. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

B. Prepare test and inspection reports.

3.6 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

B. Set field-adjustable flow set points of balancing valves.

C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

END OF SECTION 22 11 19

SECTION 22 13 16- SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

B. Related Sections:
1. Section 221313 "Facility Sanitary Sewers" for sanitary sewerage piping and structures outside the building.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 UTILITIES

A. See Drawings for Points of Connection.

B. Certain site utilities are to be connected to and extended. Before laying of any pipe or digging of any trenches, Contractor shall determine by actual excavation and measurement exact location and depth of lines to which he is to connect. In event depth of lines is not sufficient to permit connection in manner indicated, Contractor shall obtain direction from the Owner's representative before proceeding with this work.

C. Verify that utility companies size their services and meters to suit ultimate demand indicated on the drawings.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

    1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

1.14 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.15 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Architect's written permission.

1.16 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.17 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.18 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.

C. ASTM C 1540, CISPI, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ANACO-Husky SD 4000 series.
b. Clamp All HI_TORQ 125 series

2. Standards: ASTM C 1277 and CISPI 310.
3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Soil and waste piping within the building itself and outside within five feet (5') of the foundation, shall be no-hub cast iron pipe and fittings, asphaltum coated, free from defects, and shall comply with CISPI. Standard 301, ASTM A-888 or ASTM A-74. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute. Fittings shall be made up with "Husky" SD 4000 series or “Clamp All” HI-TORQ 125 series stainless steel type 304 couplings and shall conform to ASTM C1540 & ASTM C564 except all above ground vent pipe fittings may be made with "Anaco" or "Tyler" stainless steel two band couplings conforming to CISPI Standard 310.

E. Except where otherwise indicated on the plans, building sewer piping from five feet (5') outside of the building to connections at the sewer shall be PVC (polyvinyl chloride) ASTM D3034, SDR-35 sewer pipe with locked-in gasket (ASTM F477, Elastomeric Seal)

2.3 CLEANOUTS

A. Cast-Iron Cleanouts:

1. Cleanouts to Grade: Jay R. Smith No. 4258 or Jay R. Smith No. 4253 with X-H bronze plug and X-X-H non-skid cover with lifting device set flush with surface for concrete areas. Asphalt or nonsurfaced areas shall be installed with ring of concrete poured around the bottom flange six inches (6") below surface. Use cast iron soil pipe on cleanout risers. For cleanouts in non-traffic areas, terminate cleanout plug in concrete yard box
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Smith, Jay R. Mfg. Co.
    b. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

3. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
4. Top-Loading Classification(s): Light Duty Medium Duty Heavy Duty and Extra-Heavy Duty.
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

B. Yard Boxes & Vaults: For service for cleanouts, shall be Brooks Products or Fraser Cement Products Co., rectangular concrete type with vandal-proof cast iron cover and name of service clearly marked on cover. Box shall be of size to permit full range of valve operation and to permit easy removal of valve assembly. Vaults shall be sectional type.

2.4 CORROSION PROTECTION

A. General.

1. Corrosion protection shall be provided for all below grade cast iron and copper piping and associated valves and fittings. Such piping shall be protected from corrosion by encasement in a polyethylene protective wrapping, referred to hereafter as polywrap. Although not intended to be a completely air and water tight enclosure, the polywrap shall provide a continuous barrier between the pipe and surrounding bedding and backfill.

B. Materials.

1. Cast iron piping encasement.

    a. The polywrap shall be minimum 8 mil. in thickness, group 2, linear low density, flat tube, natural (clear) virgin polyethylene film formed into tubes or sheets as required. Material shall meet or exceed the requirements of AWWA C105, ANSI A21.5 and ASTM A674.
    b. The polywrap shall be as manufactured by Northtown Company or approved equal.

2. The minimum Polywrap flat tube width for each pipe diameter shall be as follows:

Pipe Size / Type	Polywrap Flat Tube Width
2” to 3” cast iron	14”

4” cast iron	16”
6” cast iron	20”
8” cast iron	24”

3. The polywrap shall be secured as specified with 2 inch wide pressure sensitive plastic tape not less than 10 mils thick.

   a. Tape shall be Scotchwrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex or approved equal.

4. Piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.

2. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

O. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."

2. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

P. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

T. Below-grade piping through exterior walls shall be sealed using Link Seal modular seal with nitrile seal elements and stainless steel bolts and sleeves as manufactured by Century Line.

U. Corrosion Protection:

a. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections. Slip the tube around the pipe, centering it to provide a 1-ft overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at each joint to facilitate installation of the polywrap. The bunched-up polywrap shall be pulled from the preceding length of pipe, slipped over the end of the new length of pipe, and secured in place with one circumferential turn of tape plus enough overlap to assure firm adhesion. The end of the polywrap shall be slipped from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe and tape it in place. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.
b. Rips, punctures or other damage to the tube shall be repaired with the adhesive tape or pieces of tube material secured with tape. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.

c. Valves, tees, crosses and outlets shall be wrapped with flat sheets of the same material. The sheets shall be passed under valves and brought up around the body to the stem. Edges shall be brought together, folded twice and secured with the adhesive tape.

3.3 JOINT CONSTRUCTION

A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

   a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
   b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
   c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
8. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
4. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4: 84 inches with 3/8-inch rod.
2. NPS 1-1/2: 108 inches with 3/8-inch rod.
3. NPS 2: 10 feet with 3/8-inch rod.
4. NPS 2-1/2: 11 feet with 1/2-inch rod.
5. NPS 3: 12 feet with 1/2-inch rod.
6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.

I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

3.7 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. No piping work shall be concealed or covered until piping has been tested, inspected and approved by the Inspector. All piping for plumbing systems shall be completely installed and tested as required by the Uniform Plumbing Code. Test pressures and times indicated are a minimum only. All tests shall be as required by the governing authority as wellTest for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.10 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

C. Aboveground, vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

D. Underground, soil, waste, and vent piping shall be the following:

1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.

END OF SECTION 22 13 16

SECTION 22 13 19- SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cleanouts.
2. Floor drains.
3. Trench drains.
4. Miscellaneous sanitary drainage piping specialties.
5. Grease interceptors.

B. Related Requirements:

1. Section 221423 "Storm Drainage Piping Specialties" for storm drainage piping inside the building, drainage piping specialties, and drains.
2. Section 224300 "Medical Plumbing Fixtures" for plaster sink interceptors.
3. Section 334100 "Storm Utility Drainage Piping" for storm draining piping and piping specialties outside the building.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. FOG: Fats, oils, and greases.

C. HDPE: High-density polyethylene plastic.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve

headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.12 SUBMITTAL DATA

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for the following:

1. Grease interceptors.

B. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

C. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.

4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.

1.13 INFORMATIONAL SUBMITTALS

A. Manufacturer Seismic Qualification Certification: Submit certification that grease interceptors, accessories, and components will withstand seismic forces defined in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
   b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

1.14 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

1.15 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

1.16 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.17 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.18 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.19 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate size and location of roof penetrations.

1.20 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Cultures: Provide 1-gal. bottles of bacteria culture recommended by manufacturer of FOG disposal systems equal to 200 percent of amount installed, but no fewer than 2 1-gal. bottles.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Exposed Metal Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Zurn
b. JR Smith
c. Watts

2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.
3. Size: Same as connected drainage piping
4. Body Material: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure: Countersunk, brass plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

B. Metal Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Zurn
b. JR Smith
c. Watts

2. Standard: ASME A112.36.2M for cast-iron soil pipe with cast-iron ferrule threaded, adjustable housing cleanout.
3. Size: Same as connected branch.
4. Type: Cast-iron soil pipe with cast-iron ferrule Threaded, adjustable housing.
5. Body or Ferrule: Cast iron.
6. Outlet Connection: Threaded.
7. Closure: Brass plug with tapered threads.
8. Adjustable Housing Material: Cast iron with set-screws or other device.
9. Frame and Cover Material and Finish: Nickel-bronze, copper alloy.
10. Frame and Cover Shape: Round.
11. Top Loading Classification: Heavy Duty.
12. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn
   b. JR Smith
   c. Watts

2. Standard: ASME A112.36.2M. Include wall access.
3. Size: Same as connected drainage piping.
4. Body: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Option for drilled-and-threaded plug in first subparagraph below is for a screw for a wall cover plate.
6. Closure: Countersunk, brass plug.
7. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
8. Wall Access: Round, flat, chrome-plated brass or stainless-steel cover plate with screw.
9. Wall Access: stainless-steel wall-installation frame and cover.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Zurn
   b. JR Smith
   c. Watts

3. Standard: ASME A112.6.3.

4. Pattern: Floor drain.
5. Body Material: Gray iron.
6. Seepage Flange: Required.
7. Anchor Flange: Required.
8. Clamping Device: Required.
9. Outlet: Bottom.
10. Coating in first subparagraph below is usually used only on sanitary floor drains.
11. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
12. Sediment Bucket: Not required.
13. Top or Strainer Material: Nickel bronze.
14. Top of Body and Strainer Finish: Nickel bronze.
15. Top Shape: Round.

B. Stainless-Steel Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Josam Company.

3. Standard: ASME A112.3.1.
4. Outlet: Bottom.
5. Top or Strainer Material: Stainless steel.
6. Top Shape: Round.
7. Trap-Primer Connection: Required.

2.3 TRENCH DRAINS

A. Trench Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Zurn
   b. JR Smith
   c. Watts

3. Standard: ASME A112.6.3 for trench drains.
4. Material: Ductile or gray iron.
5. Flange: Anchor.
6. Clamping Device: Required.
7. Outlet: Bottom.

8. Grate Material: Ductile iron.
9. Grate Finish: Painted.
10. Top Loading Classification: Medium Duty.

2.4 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.
2. Size: Same as connected stack vent or vent stack.

2.5 GREASE INTERCEPTORS

A. Grease Interceptors:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Jensen Precast.

3. Standard: ASME A112.14.3 and PDI-G101, for intercepting and retaining fats, oils, and greases from food-preparation or -processing wastewater.
4. PDI certification is currently limited to 50-gpm (3.15-L/s) flow rate and 100-lb (45.4-kg) grease retention by PDI-G101. Larger uncertified units are available. PDI-G101 is being revised, should be available by end of 2003, and will include capacities to 100 gpm (6.3 L/s).
5. Plumbing and Drainage Institute Seal: Not required.
6. Rate in subparagraph below is limited to 100 gpm (6.3 L/s).
7. Capacity in first subparagraph below is limited to 200 lb (90.7 kg).
8. Grease Retention Capacity: 750 Gallon.
9. Inlet and Outlet Size: 4”
10. Cleanout: Integral or field installed on outlet.
11. Mounting: Recessed, flush with floor.
12. Operation: Manual cleaning.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Equipment Mounting:

1. Install grease interceptors on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 03 30 00 "Cast-in-Place Concrete." Section 03 30 53 "Miscellaneous Cast-in-Place Concrete."
2. Comply with requirements for vibration isolation and seismic control devices specified in Section 22 05 48 "Vibration and Seismic Controls for Plumbing Piping and Equipment"
3. Comply with requirements for vibration isolation devices specified in Section 22 05 48.13 "Vibration Controls for Plumbing Piping and Equipment."

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

E. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
1. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
2. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

F. Install trench drains at low points of surface areas to be drained. Set grates of drains flush with finished surface, unless otherwise indicated.

G. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.

H. Install flashing fittings on sanitary stack vents and vent stacks that extend through roof.

I. Install through-penetration firestop assemblies in plastic conductors and stacks at floor penetrations.

J. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.
1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
2. Size: Same as floor drain inlet.

K. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

L. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.

M. Install vent caps on each vent pipe passing through roof.

N. Install frost-resistant vent terminals on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.

O. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

P. Install frost-proof vent caps on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.

Q. Install grease interceptors, venting according to authorities having jurisdiction and with clear space for servicing.
   1. Flush with Floor Installation: Set unit and extension, if required, with cover flush with finished floor
   2. Install cleanout immediately downstream from interceptors not having integral cleanout on outlet.

R. Install wood-blocking reinforcement for wall-mounting-type specialties.

S. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 CONNECTIONS

A. Comply with requirements in Section 22 13 16 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Grease Interceptors: Connect inlet and outlet to unit, and connect flow-control fitting and vent to unit inlet piping. Install valve on outlet of automatic drawoff-type unit.

D. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

E. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

3.3 FLASHING INSTALLATION

A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
   1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft., 0.0938-inch thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft., 0.0625-inch thickness or thinner.
   2. Copper Sheets: Solder joints of copper sheets.

B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
   1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.
   2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.
   3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.

C. Set flashing on floors and roofs in solid coating of bituminous cement.

D. Secure flashing into sleeve and specialty clamping ring or device.

E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Section 07 62 00 "Sheet Metal Flashing and Trim."

F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.4 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
   1. Grease interceptors.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.6 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain grease removal devices. Refer to Section 01 79 00 "Demonstration and Training."

END OF SECTION 22 13 19

SECTION 22 42 13 13- COMMERCIAL WATER CLOSETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Water closets.
2. Flushometer valves.
3. Toilet seats.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.

11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
12. Clearance around accessible water closets and in toilet compartments shall be 60 inches minimum measured perpendicular from the side wall and 56 inches minimum measured perpendicular from the rear wall per CBC Section 11B-604.3.1.
13. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
14. Accessible fixture controls shall comply with CBC Sections 11B-604.6 for water closets and 11B-604.9.5 for children's water closets.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each

submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.

2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding

proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than six of each type.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES (Also see General Conditions)

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 FLOOR-MOUNTED, BOTTOM-OUTLET WATER CLOSETS

A. Water Closets: Floor mounted, bottom outlet, top spud.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Bowl:

a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
b. Material: Vitreous china.
c. Type: Siphon jet.
d. Style: Flushometer valve.
e. Height: Standard.
f. Rim Contour: Elongated.
g. Water Consumption: 1.28 gal. (4.8 L) per flush.
h. Spud Size and Location: NPS 1-1/2 (DN 40); top.

2.2 FLUSHOMETER VALVES

A. Lever-Handle, Diaphragm Flushometer Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Sloan Valve Company.

2. Standard: ASSE 1037.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: Exposed.
9. Consumption: 1.28 gal. (4.8 L) per flush.
10. Minimum Inlet: NPS 1 (DN 25).
11. Minimum Outlet: NPS 1-1/4 (DN 32).

2.3 TOILET SEATS

A. Toilet Seats:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. Bemis Manufacturing Company.
   b. Olsonite Seat Co.

2. Standard: IAPMO/ANSI Z124.5.
3. Material: Plastic.
4. Type: Commercial (Standard).
5. Shape: Elongated rim, open front.
6. Hinge: Self-sustaining, check.
7. Hinge Material: Noncorroding metal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, according to ICC/ANSI A117.1.

B. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.

C. Install toilet seats on water closets.

D. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Where installing piping adjacent to water closets, allow space for service and maintenance.

3.4 ADJUSTING

A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.

B. Adjust water pressure at flushometer valves to produce proper flow.

C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.

B. Install protective covering for installed water closets and fittings.

C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-604.6 for water closets

END OF SECTION 22 42 13 13

SECTION 22 42 16 13- COMMERCIAL LAVATORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lavatories.
2. Faucets.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
10. All single-user toilet facilities shall be identified as a Gender Neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.2.6.3. no pictogram, text or braille is required on the symbol. If a tactile jamb signage is provided, the signage shall comply with the appropriate technical requirements of CBC Section 11B-703. Examples of appropriate designations are “ALL-GENER RESTROOM”, “RESTROOM’, OR “UNISEX RESTROOM”. DSA BU 17-01.
11. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.

12. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
13. Accessible fixture controls shall comply with CBC Sections 11B-611.3 for lavatories and sinks.
14. Accessible lavatories and sinks shall be mounted with the front of the higher of the rim or counter surface 34” maximum above the finish floor or ground. Depth of lavatories or sinks shall not interfere with knee an toe clearance provided in accordance with CBC 11B-306 when forward approach is required CBC Sections 11B-606.3 and 11B606.7.
15. Water supply and drain pipes under accessible lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under accessible lavatories or sinks. CBC Section 11B-606.5.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
   b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
   c. Include all pertinent construction, installation, performance and technical data.
   d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

      1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
      2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

   e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES

A. Lavatory: Vitreous china, wall mounted, with back.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Standard America.
b. Kohler Co.

2. Fixture:

a. Standard: ASME A112.19.2/CSA B45.1.
b. Type: For wall hanging.
c. Faucet-Hole Location: Top.

d. Color: White.
e. Mounting Material: Chair carrier.

3. Support: ASME A112.6.1M, Type II, concealed-arm lavatory carrier.

2.2 SOLID-BRASS, MANUALLY OPERATED FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Lavatory Faucets: Manual-type, single-control mixing, commercial, solid-brass valve.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago Faucets.

2. Standard: ASME A112.18.1/CSA B125.1.
3. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
4. Body Material: Commercial, solid brass.
5. Finish: Polished chrome plate.
6. Mounting Type: Deck, exposed.

2.3 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Chicago

E. Operation: Loose key.

F. Risers:

1. NPS 3/8.
2. Chrome-plated, rigid-copper-pipe and brass straight or offset tailpieces riser.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Locations and Accessibility: Install equipment for ease of maintenance and repair. If changes in the indicated locations or arrangements are made by the Contractor, they shall be made without additional charges.

B. Openings: Furnish information to the other trades on size and location of openings which are required in walls, slabs, roof, for piping and equipment at the proper times.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Closing-In of Uninspected Work: Do not allow or cause any of the work to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Any work enclosed or covered prior to such inspection and test shall be uncovered and, after it has been inspected, tested, and approved, make all repairs with such materials as may be necessary to restore all work, including that of other trades, to its original and proper condition.

3.2 INSTALLATION

A. Install lavatories level and plumb according to roughing-in drawings.

B. Install supports, affixed to building substrate, for wall-mounted lavatories.

C. Install accessible wall-mounted lavatories at handicapped/elderly mounting height for people with disabilities or the elderly, according to ICC/ANSI A117.1.

D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

G. Point of use mixing valve in cabinet to be recessed in wall, under lavatory.

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of lavatories, inspect and repair damaged finishes.

B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed lavatories and fittings.

D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-606.4 for lavatories and sinks.

D. Accessible sinks shall be 6-1/2” deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34” maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 42 16 13

SECTION 22 47 13- DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes drinking fountains and related components.

1.3 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. C.C.R., Title 24, Part 5 (2019 CPC).
2. 2019 California Plumbing Code.
3. SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems.
4. National Fire Protection Association.
5. California Division of the State Architect.
6. California State Division of Industrial Safety.
7. County Health Department.
8. Any other legally constituted body-having jurisdiction thereof.
9. Access plumbing fixtures shall comply with all of the requirements of CBC Division 6.
10. Heights and location of all fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
11. Accessible fixture controls shall comply with CBC Sections 11B-602.3 for drinking fountains.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.5 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.6 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.7 EXAMINATION OF PREMISES

A. Before bidding on this work, Contractors shall make a careful examination of the premises and shall thoroughly familiarize themselves with the requirements of the contract. By the act of submitting a proposal for the work included in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions of the site.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during

installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, six (6) copies of valid submittal data on all fixtures, material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

   a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of

comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.

b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

    1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
    2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings, unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternate.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section.

In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.12 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains to include in maintenance manuals.

1.13 RECORD DRAWINGS (Also see General Conditions)

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

A. Drinking Fountains: Stainless steel, wall mounted.

1. Stainless-Steel Drinking Fountains:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   1) Elkay Manufacturing Co.
   2) Haws Corporation.

3. Type Receptor: On horizontal support.
4. Back Panel: Stainless-steel wall plate behind drinking fountain.
5. Bubblers: Two, with adjustable stream regulator, located on deck.
6. Control: Push button.
7. Drain: Grid type with NPS 1-1/4 tailpiece.
8. Supply: NPS 3/8 with shutoff valve.
9. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
10. Support: ASME A112.6.1M, Type III lavatory carrier.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

B. Examine walls and floors for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.

B. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.

C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

E. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Install ball, gate, or globe shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."

D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Adjust fixture flow regulators for proper flow and stream height.

3.5 CLEANING

A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

C. Provide protective covering for installed fixtures.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

3.6 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains, 11B-604.6 for water closets, 11B-604.9.5 for children's water closets, 11B-605.4 for urinals, 11B-606.4 for lavatories and sinks, 11B-607.5 for bathtubs, 11B-608.5 for showers, and 11B-611.3 for washing machines and clothes dryers.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

3.7 PLUMBING FIXTURES

A. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6.

B. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.

C. Fixture controls shall comply with CBC Sections 11B-601.3 for drinking fountains.

D. Accessible sinks shall be 6-1/2" deep maximum. Sinks shall be mounted with front of the higher of the rim and counter surface 34" maximum above the finish floor or ground.

E. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

END OF SECTION 22 47 13

DIVISION 31

EARTHWORK

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and, grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants, and, grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site-clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Erosion Control Drawings C1.10-C1.15.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

3.4 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 31 10 00

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 320120 - DETECTABLE WARNING SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Raised truncated domes.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Detectable warning surfaces:
      a. Detectable warnings surfaces shall comply with CBC Section 11B-705.1.
      b. Detectable warning surfaces shall be yellow conforming to FS 33538 of Federal Standard 595C, except for locations at curb ramps, islands, or cut-through medians where color used shall contrast visually with that of adjacent walking surfaces, either light-on-dark, or dark-on-light. CBC Sections 11B-705.1.1.3.
      c. Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact. CBC Section 11B-705.1.1.4.
      d. Provide minimum 5 year warranty per DSA Bulletin 10/31/02, revised 04/09/08.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Samples: 5 by 5 inch sample.

C. Shop Drawings: Show fabrication details, composite structural system, joints, and material to be used as well as outlining installation materials and procedure.

D. Qualification Data: For manufacturer.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance requirements indicated, based on comprehensive testing of current materials.

F. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Duration: 5 years. Such warranty shall indicate compliance with architectural standards as published in the current edition of the California Building Standards Code, and also include durability criteria which indicate that the shape, color fastness, confirmation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly for specified years after initial installation.
   1. As used in this bulletin, "not degrade significantly" means that the product maintains at least 90 percent of its approved design characteristics, as determined by the enforcing agency.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Raised Truncated Domes: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Armorcast Products Company. (Basis of Design)
   2. Access Tile.
   3. Armor-Tile by Engineered Plastics Inc.
   4. ADA Tactile Systems.
   5. Or equal.

2.2 RAISED TRUNCATED DOMES

A. Surface applied system:
   1. Product: Model A6003648 by Armorcast Products Company.
   2. Compressive Strength: 11,430 PSI per ASTM C-170-99.
   3. Shear Strength: 11,670 PSI per ASTM D-372-02.
   4. Flexural Strength: 3,330 PSI per ASTM C-580-02.
   5. Modulus Elasticity: 1,776,400 PSI per ASTM C-580-02.
   6. Tensile Strength: 1,710 PSI per ASTM C-307-99.
   7. Chemical Resistance: Pass per ASTM D-543.
   8. Simulated Sunlight: Pass per ASTM D-1501.
   9. Accelerated Service Test: Pass per ASTM D-756.
   10. Water Absorption: <.1% per ASTM D-570.
   11. Flammability Test: Pass per ASTM D-635.
   12. Fungus Resistance Test: No Growth per ASTM G-21.
   13. Smoke Density: 0.3 (DS@1.5 Minutes) and 14 (DS@4 Minutes) per ASTM E-662-03.
   14. Color: Yellow.

15. Installation: Flush install by pressing into wet concrete per manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 INSTALLATION

A. Surface Applied System:
1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
3. Ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to the Architect.
4. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.
5. The surface to receive the detectable warning surface tile (not recommended for asphalt) is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a rag soaked in Acetone.
6. Immediately prior to installing the detectable warning surface tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.
7. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
8. Apply the adhesive on the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2” width of the adhesive locator. A 3 x 4 foot tile will typically require an entire tube of adhesive.
9. Set the tile true and square to the curb ramp area as detailed in the design drawings.
10. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3-1/2 inch using the recommended diameter bit.

Drill through the tile without hammer option until the tile has been successfully penetrated, and then with hammer option to drill into the concrete.

11. Immediately after drilling each hole, and while still applying foot pressure, vacuum, brush or blow away dust and set the mechanical fastener as described below, before moving on to the next hole.
12. Mechanically fasten tiles to the concrete substrate using a hammer to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the hammer, taking care to avoid any inadvertent blows to the truncated dome or tile surface. A plastic deadblow or leather hammer is recommended.
13. Working in a sequence which will prevent buckles in the tile, proceed to drill and install all fasteners in the tile's molded recesses.
14. Following the installation of the tiles, the perimeter caulking sealant should be applied. Follow the perimeter caulking sealant manufacturer's recommendations when applying. Tape all perimeter edges of the tile and also tape the adjacent concrete back 1/2” from the tile's perimeter edge. Tool the perimeter caulking with a plastic applicator or spatula to create a straight edge in a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
15. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking.

END OF SECTION 320120

SECTION 32 12 16 - HOT-MIX ASPHALT (HMA) PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hot-mix asphalt paving and paving overlay.

B. Traffic Stripes and Pavement Marking.
   1. traffic stripe: A longitudinal centerline or a longitudinal lane line used for separating traffic lanes in the same direction of travel or in the opposing direction of travel or a longitudinal edge line marking the edge of the traveled way or the edge of a lane at a gore area separating traffic at an exit or entrance ramp. A traffic stripe is a traffic line as shown.
   2. Pavement marking: A transverse marking such as (1) a limit line, (2) a stop line; or (3) a word, symbol, shoulder, parking stall, or railroad grade crossing marking.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

C. Material certificates.

D. Log of placement of asphalt, including dates, times, temperature readings and other pertinent information.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC) and the California Department of Transportation (Caltrans), latest editions and supplements for asphalt paving work. These Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and payment sections do not apply to this document.

C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Tack Coat: Minimum surface temperature of 60 deg F.
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: Crushed rock conforming to SSPWC 203-6.2.3.

B. Fine Aggregate: Sand, rock dust, mineral filler, or a blend of these materials conforming to SSPWC 203-6.2.3. Mineral filler, if required, shall conform to SSPWC section 203-6.2.3.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Paving asphalt, viscosity grade PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

B. Tack Coat: PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

C. Mixes: Hot-Mix Asphalt (HMA):

Surface Course: Dense, hot-laid, hot-mix asphalt plant mix III-C2, PG 64-10 designed in conformance with SSPWC Section 203.

Base Course: Dense, hot laid, hot-mix asphalt plant mix III-B, PG 64-10 designed in conformance with SSPWC Section 203.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-1952E for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01R2 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: White, Yellow, and Blue as indicated on the plans.

C. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

PART 3 - EXECUTION

3.1 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.

1. Mill to a depth of 2 inches, minimum.

3.2 PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.

C. Patching: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

3.3 SURFACE PREPARATION

A. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.08 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
3. Asphalt binder tack coat temperature must be in the range of 285 to 350 deg F when applied.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at minimum temperature of 280 deg F and maximum temperature of 350 deg F (PG 64-10).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Pave HMA in maximum 3” thick compacted layers.

2. Minimum atmospheric temperature shall be 55 deg F, and minimum surface temperature shall be 60 deg F. If the surface to be paved is both in sunlight and shade, pavement surface temperatures must be taken in the shade.

3. Complete compaction for Base Course before surface temperature drops below 250 deg F, and for Finish Course before surface temperature drops below 150 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch (no minus).

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch
2. Surface Course: 1/8 inch
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 PAVEMENT STRIPING AND MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age before starting pavement striping and marking, as recommended by the paint manufacturer.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

E. Do not paint if the atmospheric temperature could drop below 50 deg F during the drying period.

3.8 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 32 12 16

SECTION 32 13 13 – CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Curbs and gutters.
   2. Walkways.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated, including admixtures.

B. Design Mixtures: For each concrete pavement mixture.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

C. All work to be performed and materials to be used shall be in accordance with the Standard Specifications for Public Works Construction, latest edition and supplements.

D. The Contractor shall have one copy of the Standard Specifications at the job site.

E. The Standard Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and pavement sections do not apply to this document.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."

2.2 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: ASTM C 150, Type II, low alkali. Supplement with the following:

a. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quantity.

B. Combined Aggregates: Gradation “C” conforming to SSPWC Section 201-1.3.2.

C. Water: ASTM C 94/C 94M.

2.3 CURING MATERIALS

A. Liquid Curing Compound: ASTM C309, fugitive dye dissipating type, complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.

B. Moisture-Retaining Cover (Curing Sheet): ASTM C 171, non-staining polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

2.4 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

D. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-

1952 for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: As indicated per plan.

2.5 WHEEL STOPS

A. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures in conformance with SSPWS Section 201, with the following properties:

1. Concrete class: 560-C-3250
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45
3. Slump Limit: 4 inches, plus or minus 1 inch.

B. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates to Architect for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

A. General: Form construction, isolation, and control joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

F. Portland Cement Concrete paving shall be stable, firm, and slip-resistant and shall comply with CBC Sections 11B-302 and 11B-403.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.

1. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturers written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these methods.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances as follows

1. Elevation: 1/4 inch
2. Thickness: Plus 3/8 inch minus 1/4 inch
3. Surface: Gap below 10-foot-long, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.9 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.10 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.11 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 323113 - CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Chain-Link Fences: Industrial.
   2. Gates: Swing.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.

A. Accessibility Requirements for Door Hardware: (all requirements below shall apply to gates as well)
   1. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.
   2. The clear opening width for a door shall be 32” minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. There shall be no projections into it below 34” and 4” maximum projections into it between 34” and 80” above the finish floor or ground. Door closers and stops shall be permitted to be 78” minimum above the finish floor or ground. CBC Section 11B-404.2.3
   3. Handles, pulls, latches, locks, and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34” minimum and 44” maximum above finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable form both side. CBC Section 11B-404.2.7
   4. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.
      a. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 pounds (22.2 N) maximum.
      b. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds (67N).
      c. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.

d. The force required to activate any operable parts, such as retracting latch bolts or disengaging other devices, shall be 5 pounds (22.2N) maximum to comply with CBC Section 11B-309.4.

5. Door closing speed shall be as follows: CBC Section 11B-404.2.8.
   a. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds min.
   b. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
6. Thresholds shall comply with CBC Section 11B-404.2.5.
7. Floor stops shall not be located in the path of travel and 4" maximum from walls.
8. Hardware (including panic hardware) shall not be provided with "Night Latch" (NL) function for any accessible doors or gates unless the following conditions are met per DSA Interpretation 10-08 DSA /AC (External), revised 4/28/09. Such conditions must be clearly demonstrated and indicated in the specifications:
   a. Such hardware has a 'dogging' feature.
   b. It is dogged during the time the facility is open.
   c. Such 'dogging' operation is performed only by employees as their job function (non-public use).
9. Pair of doors: limit swing of one leaf to 90 degrees so that a clear floor space is provided beyond the arc of the swing for the wall-mounted tactile sign. CBC Section 11B-703.4.2.1.

B. Fences, gates and hardware:
   1. Gates that are part of the accessible route shall meet all the requirements of an accessible door in compliance with CBC Section 11B-404.
   2. The lever of lever actuated latches or locks for an accessible gate shall be curved with a return to within 1/2" of the (face of) gate to prevent catching on the clothing or persons. California Referenced Standards code. T-24 Part 12, Section 12-10-202, Item (F).
   3. Swing doors and gate surfaces within 10" of the finish floor or ground shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16" of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped. CBC Section 11B-404.2.10.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
   1. Fence and gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, swing gate, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

C. Product Certificates: For each type of chain-link fence, and gate, signed by product manufacturer.
   1. Strength test results for framing according to ASTM F 1043.

D. Qualification Data: For Installer.

E. Maintenance Data: For the following to include in maintenance manuals:

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

B. Interruption of Existing Utility Service: Do not interrupt utility services to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect no fewer than 2 days in advance of proposed interruption of utility services.
   2. Do not proceed with interruption of utility services without Architect's written permission.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Chain-Link Fences and Gates: Subject to compliance with requirements, provide products by one of the following.
   1. Master-Halco.
   2. Ameristar.
   3. Anchor Fence.
   4. Merchants Metals.
   5. Swan Fence Inc.

6. Or equal.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
   1. Steel Wire Fabric: Metallic-coated wire with 9 gage (0.144 inches) core thickness.
      a. Mesh Size: 2 inches.
      b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied after weaving.
   2. Selvage: Knuckled at both selvages.

2.3 INDUSTRIAL FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, and the following:
   1. Group: Group IC round high yield pipe, ASTM F 1043, domestic (not imported) Deluxe Quality (DQ-40) Industrial (not Schedule 40).
   2. Fence Height: As indicated on Drawings.
   3. Strength Requirement: Heavy industrial according to ASTM F 1043.
   4. Post Diameter and Thickness:
      a. Top and Bottom Rail: 1-5/8 inch O.D. (nominal 1-1/4 inch).
      b. Terminal Post (Corner, End, and Gate Post): 2-7/8 inch O.D. (nominal 2-1/2 inch).
      c. Line and Brace Rail: 1-7/8 inch O.D. (nominal 1-1/2 inch).
      d. Swing Gate Members: 1-7/8 inch O.D. (nominal 1-1/2 inch).
   5. End and Corner Post Top: Dome.
   6. Coating for Steel Framing:
      a. Metallic Coating:
         1) Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123 or 4.0-oz./sq. ft. zinc coating per ASTM A 653.
         2) Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
         3) External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc pigmented coating.
         4) Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
         5) Coatings: Any coating above.
      b. Polymer Coating:
         1) ASTM D 668, Class 2b, fluidized PVC bonded and cured onto metallic-coated steel wire.
         2) Color: As selected by Architect from manufacturer's full range, complying with ASTM F 934.

2.4 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:
   1. Location: Extended along bottom of fence fabric and along top when either top or bottom rails are not indicated on Drawings.

B. Metallic-Coated Steel Wire: Minimum 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817, ASTM A 824, and the following:
   1. Metallic Coating: Matching chain-link fabric coating type and weight.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

2.6 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for swing gate types.
   1. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.

B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900, domestic Deluxe Quality (DQ), and the following:
   1. Gate Fabric Height: 2 inches less than adjacent fence height.
   2. Leaf Width: As indicated.
   3. Frame members, including interior bracing:
      a. Tubular Steel: 1-7/8 inch O.D. (nominal 1-1/2 inch).

C. Frame Corner Construction:
   1. Welded adjustable truss rods for panels 5 feet wide or wider.

D. Hardware: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
   1.

2.7 CAST-IN-PLACE CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94.
   1. Concrete Mixes: Normal-weight concrete with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

2.8 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

2.9 POLYMER FINISHES

A. Supplemental Color Coating: In addition to specified metallic coatings for steel, provide fence components with polymer coating.

B. Metallic-Coated Steel Tension Wire: PVC-coated wire complying with ASTM F 1664, Class 2b.

C. Metallic-Coated Steel Framing and Fittings: Comply with ASTM F 626 and ASTM F 1043 for polymer coating applied to exterior surfaces and, except inside cap shapes, to exposed interior surfaces.
   1. Polymer Coating: Not less than 10-mil- thick PVC or 3-mil- thick polyester finish.

D. Color: Match chain-link fabric, complying with ASTM F 934.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.
   1. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Hole diameter dug or drilled minimum 4 times largest cross section of post and minimum depth of 24 inches plus additional 3 inch for each 1 feet increase in fence height over 4 feet.
      b. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts equidistant at intervals not exceeding 10 feet o.c unless otherwise indicated.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
   1. Locate horizontal braces at midheight of fabric 6 feet or higher, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.
   1. Top Tension Wire: Install tension wire through post cap loops.
   2. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Bottom Rails: Install, spanning between posts.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.5 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323113

WHITAKER ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

8401 MONTANA AVE
BUENA PARK, CA 90621
BUENA PARK SCHOOL DISTRICT

DSA File No. 30-4
App. No. 04-120689
PTN. 66456-49

DRAWING INDEX

SHT NO	SHEET NAME
GENERAL	
A0.1	COVER SHEET
A0.2	GENERAL NOTES AND ABBREVIATIONS
A0.3	CODE ANALYSIS SITE PLAN
A0.4	EXITING FLOOR PLAN
CIVIL	
C0.01	TITLE SHEET
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.30	GRADING PLAN
C1.40	PAVING PLAN
C5.00	DETAILS
ARCHITECTURAL	
A1.1	SITE PLAN - OVERALL
A2.1	DEMOLITION/ ALTERATION FLOOR PLANS/RCPS
A7.1	ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS
A7.2	INTERIOR ELEVATIONS
A9.1	DOOR SCHEDULE AND DETAILS, WINDOW TYPES AND DETAILS
A10.1	EXTERIOR DETAILS
A10.2	INTERIOR DETAILS
A10.3	SIGNAGE DETAILS
STRUCTURAL	
S1.1	GENERAL NOTES / STRUCTURAL DETAILS
S2.1	DEMOLITION / (E) FOUNDATION AND (E) FRAMING PLANS
PLUMBING	
P0.1	PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES
P1.1	PLUMBING DEMOLITION AND FLOOR PLANS

TOTAL SHEET COUNT: 21

STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS,
INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

Application No. 04-120689

File No. 30-4

[X] The drawings or sheets listed on the cover or index sheet (all M, E and FA drawings)
[ ] This drawing, page of specifications/calculations

have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:

1. design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2. coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.

The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1. (Title 24, Part 1, Section 4-317 [b])

I find that:
[X] All drawings or sheets listed on the cover or index sheet
[ ] This drawing or page

[X] is/are in general conformance with the project design and
[X] has/have been coordinated with the project plans and specifications

Signature **Date** 10/15/2021

Architect or Engineer designated to be in general responsible charge.

Brian P. Whitmore
Print Name

C 30345 — **License Number**
09-30-2023 — **Expiration Date**

STATEMENT OF GENERAL CONFORMANCE AND SIGNATURE BLOCK PER IR A-18

CODES AND REGULATIONS

PARTIAL LIST OF APPLICABLE CODES AS OF JANUARY 1, 2020*

2019 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
(2018 INTERNATIONAL BUILDING CODE, VOL 1 & 2 AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ELECTRICAL CODE AND 2019 CALIFORNIA AMENDMENTS)
(2017 NATIONAL ELECTRICAL CODE AND 2019 CALIFORNIA AMDNMENTS)

2019 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
(2018 CALIFORNAI MECHANICAL CODE AND 2019 CALIFORNIA AMENDEMTNS)

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
(2018 IAPMO UNIFORM PLUMBING CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR

2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
(2018 INTERNATIONAL FIRE CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
(2018 INTERNATIONAL EXISTING BUILDING CODE AND 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen) PART 11, TITLE 24 CCR

2019 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

2016 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS (PER 2019 CBC PART 2 CH 35)

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (CA AMENDED).....2016 EDITION
NFPA 14 - STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS (CA AMENDED)....2016 EDITION
NFPA 17 - STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS.....2017 EDITION
NFPA 17A - STANDARD FOR WET CHEMICAL EXTINGUISHING SYTSEMS.....2017 EDITION
NFPA 20 - STANDARD FOR THE INSTALLATION FO STATIONARY PUMPS FOR FIRE PROTECTION.....2016 EDITION
NFPA 22 - STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION.....2013 EDITION
NFPA 24 - STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES (CA AMENDED).....2016 EDITION
NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE (CA AMENDED).....2016 EDITION
NFPA 80 - STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES.....2016 EDITION
NFPA 2001 - STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CA AMENDED).....2015 EDITION
UL 300 - STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT.....2005 (R2010)
UL 464 - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS INCLUDING ACCESSORIES.....2003 EDITION
UL 521 - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS.....1999 EDITION
UL 1971 - STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED.....2002 (R2010)
ICC 300 - STANDARD FOR BLEACHERS, FOLDING AND TELESCOPIC SEATING, AND GRANDSTANDS.....2017 EDITION

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2019 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.

SEE CALIFORNIA BUILDNG CODE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

*ALL PARTS OF THE 2019 CALIFORNIA BUILDING CODE BECOME EFFECTIVE JANUARY 1, 2020 EXCEPT THE EFFECTIVE DATE FOR THE USE OF THE 2019 BUILDING ENERGY EFFICIENCY STANDARDS (TITLE 24, PART 1, CHAPTER 10) IS JANUARY 8, 2019 AND THE EFFECTIVE DATE FOR THE USE OF THE CALIFORNIA ADMINISTRATIVE CODE (TITLE 24, PART 1, CHAPTER 4) IS JANUARY 8, 2019

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PROJECT DESCRIPTION

THE PROJECT INCLUDES REPLACING STOREFRONT, ADA RESTROOM AND PATH OF TRAVEL UPGRADES AND FINISHES IN THE MULTI-PURPOSE ROOM.

DSA REQUIREMENTS

1. ALL WORK SHALL CONFORM TO THE 2019 EDITION OF THE TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. AS A FACILITY WHICH COMES UNDER THE APPROVAL AND AUTHORITY OF THE DIVISION OF THE STATE ARCHITECT (DSA), THIS PROJECT IS SUBJECT TO DRAWING AND JOB SITE REVIEW BY A REPRESENTATIVE OF DSA.
3. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS AFFECTING FLA, SSS, AND/OR ACS SHALL BE MADE BY ADDENDA OR A CONSTRUCTION CHANGE DOCUMENT APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR
4. A PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN ITEM #17.
5. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
6. A COPY OF PART 1 TO PART 5 OF TITLE 24 SHALL BE KEPT AND BE AVAILABLE IN THE FIELD DURING CONSTRUCTION.
7. DSA SHALL BE NOTIFIED OF THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24, CCR
8. THE DIVISION OF THE STATE ARCHITECT IS EXEMPT FROM ARBITRATION OR MEDIATION PROCEDURES.
9. SUPERVISION BY THE DIVISION OF THE STATE ARCHITECT IS PER SECTION 4-334, PART 1, TITLE 24, CCR
10. ADMINISTRATION OF CONSTRUCTION PER PART 1, TITLE 24, CCR:
    - VERIFIED REPORTS PER SECT 4-336; PART 1, TITLE 24 CCR
    - DUTIES OF ARCHITECT PER SECT 4-331, 4-341; PART 1, TITLE 24 CCR
    - DUTIES OF CONTRACTOR PER SECT. 4-343; PART 1, TITLE 24
11. TESTING AND INSPECTION:
    - INSPECTION APPROVED BY DSA AS PER SECT. 4-333(D); PART 1, TITLE 24, CCR
    - TESTS AND TESTING LABORATORIES PER SECT 4-335
    - SPECIAL INSPECTION PER SECT. 4-333(C)
12. CHANGES IN LEVEL FOR FLOOR FINISHES SHALL CONFORM WITH CBC SECTION 11B-302 AND 11B-303.
13. ALL TESTS TO CONFORM TO REQUIREMENTS OF SECTION 4-335; PART 1, TITLE 24, CCR
14. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335; PART 1, TITLE 24, CCR AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.
15. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH ITEM #17.
16. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)
17. INSPECTOR OF RECORD REQUIREMENTS:
    A. A DSA CERTIFIED PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.
    B. INSPECTOR SHALL BE CERTIFIED AS A CLASS 3 INSPECTOR THROUGH THE DIVISION OF THE STATE ARCHITECT INSPECTOR EXAMINATION PROGRAM. INSPECTOR SHALL ALSO BE SPECIFICALLY APPROVED BY THE DIVISION OF THE STATE ARCHITECT FOR THIS PROJECT AT LEAST 10 DAYS PRIOR TO THE START OF ANY WORK FOR THIS PROJECT.
    C. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.

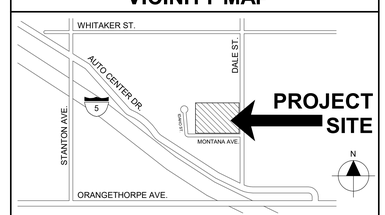
DEFERRED APPROVALS

NONE

ADD ALTERNATES

NANAWALL IN LIEU OF STOREFRONT AT NORTH ELEVATION

VICINITY MAP



DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

Studio W Architects
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Irvine, California 92618
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. C 30345 Exp. 09/30/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

GENERAL NOTES

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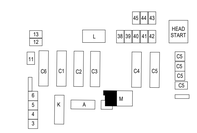
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

COVER SHEET

Date	Project Number
03/04/2022	21030
Application Number	**Drawing Number**
04-120689	A0.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/6/2022 5:06:58 PM
FILE PATH: C:\Users\gillianc\Documents\21030-Buena-Park-USD-Whitaker-MPR-A19_gilliancVASSY.rvt

ARCHITECTURAL DRAWING ABBREVIATIONS

#	POUND OR NUMBER
&	AND
*	ITEMS IDENTIFIED AS "NIC" ARE NOT PART OF THIS DSA APPROVAL
2X	NOMINAL LUMBER SIZE (4X, 6X, 8X, ETC.)
@	AT
⊥	PERPENDICULAR
A	
A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABV	ABOVE
AC	ASPHALTIC CONCRETE
ACC	ACCESS(IBLE)
ACP	ALUMINUM COMPOSITE PANEL
ACST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADDM	ADDENDUM
ADH	ADHESIVE
ADJ	ADJUSTABLE
ADJC	ADJACENT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISHED GRADE
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
ALS	ASSISTED LISTENING SYSTEM
ALT	ALTERNATE
ALUM./AL.	ALUMINUM
ANC	ANCHOR, ANCHORAGE
APLD	APPLIED
APPRX	APPROXIMATELY
ARCH	ARCHITECT(URAL)
ASC	ABOVE SUSPENDED CEILING
ASF	ABOVE STAGE FINISH
ASPH	ASPHALT
ASSY	ASSEMBLY
ASYM	ASYMMETRICAL
AUTO	AUTOMATIC
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
B	
B	BOLT
BC	BACK OF CURB
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLW	BELOW
BLW CLG	BELOW CEILING
BLW FFLR	BELOW FINISH FLOOR
BM	BENCH MARK
BN	BOUNDARY NAILING
BO	BOTTOM OF
BOT	BOTTOM
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
BRK	BRICK
BRKT	BRACKET
BRS	BRASS
BRZ	BRONZE
BS	BOTH SIDES
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT UP ROOFING
BW	BOTH WAYS
C	
C&G	CURB AND GUTTER
CAB	CABINET
CAD	CADMIUM
CB	CATCH BASIN
CBB	CEMENTITIOUS BACKER BOARD
CBC	CALIFORNIA BUILDING CODE
CEM	CEMENT
CER	CERAMIC
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFLG	COUNTERFLASHING
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CG	CORNER GUARD
CHBD	CHALKBOARD
CHFR	CHAMFER
CI	CAST IRON
CIP	CAST IN PLACE
CIR	CIRCLE
CIRC	CIRCULAR, CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CL	CHAIN LINK OR CENTER LINE
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLL	CONTRACT LIMIT LINE
CLOS	CLOSURE
CLR	CLEAR(ANCE)
CLRM	CLASSROOM
CMP	CORRUGATED METAL PANEL
CMPST	COMPOSITION
CMU	CONCRETE MASONARY UNIT
CNCL	CONCEALED
CNR	CORNER
CNTR	COUNTER
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMP	COMPOSITE
COMPT	COMPARTMENT
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONTR	CONTRACT(OR)
COORD	COORDINATE
CORR	CORRIDOR
CPR	COPPER
CPRS	COMPRESS(ED), (ION), (IBLE)
CPT	CARPET
CRS	COLD ROLLED STEEL
CS	CAST STONE
CSG	CASING
CSK	COUNTERSUNK
CSMT	CASEMENT
CSWK	CASEWORK
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
CTF	CERAMIC TILE FLOOR
CTG	COATING
CTR	CENTER
CUFT	CUBIC FOOT
CUIN	CUBIC INCH
CUST	CUSTODIAN
CUYD	CUBIC YARD
CW	CURTAIN WALL
D	
D	DRAIN
d.	PENNYWEIGHT (NAILS)
DA	DOUBLE ACTING
DBL	DOUBLE
DEG	DEGREES
DEMO	DEMOLISH, DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DG	DECOMPOSED GRANITE
DH	DOUBLE HUNG
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DMPF	DAMPPROOFING
DMT	DEMOUNTABLE
DN	DOWN
DR	DOOR
DRB	DRAINBOARD
DRLV	DOOR LOUVER
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE
DVTL	DOVETAIL
DW	DISHWASHER
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	
(E)	EXISTING
E	EAST
EA	EACH
EAR	EXHAUST AIR REGISTER
EB	EXPANSION BOLT
EE	EACH END
EF	EACH FACE
EFS	EXTERIOR FINISH SYSTEM
EHD	ELECTRIC HAND DRYER
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EM	EXPANDED METAL
EMER	EMERGENCY
EN	EDGE NAILING
ENCL	ENCLOSE(URE)
ENGR	ENGINEER
ENTR	ENTRANCE
EP	ELECTRICAL PANELBOARD
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCUTCHEON
ESCL	ESCALATOR
ESMT	EASEMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWS	EYE WASH STATION
EXC	EXCAVATE
EXH	EXHAUST
EXP	EXPOSED
EXPN	EXPANSION
EXS	EXTRA STRONG
EXT	EXTERIOR
F	
(F)	FUTURE
F/F	FACE TO FACE
FA	FIRE ALARM
FAB	FABRIC
FBD	FIBERBOARD
FBRK	FIRE BRICK
FCBRK	FACE BRICK
FD	FLOOR DRAIN
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FFEL	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LINE
FGL	FIBERGLASS
FHC	FIRE HOUSE CABINET
FHMB	FLAT HEAD MACHINE BOLT
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLATHEAD WOOD SCREW
FIN	FINISH(ED)
FJT	FLUSH JOINT
FLASH	FLASHING
FLDG	FOLDING
FLG	FLOORING
FLR	FLOOR
FLUOR	FLUORESCENT
FN	FIELD NAILING
FOB	FACE OF BLOCK
FOC	FACE OF CONCRETE/CURB
FOF	FACE OF FINISH
FOG	FACE OF GRID
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FPL	FIREPLACE
FPRF	FIREPROOF(ING)
FR	FRAME(D), (ING)
FRG	FIBERGLASS REINFORCED GYPSUM
FRP	FIBERGLASS REINFORCED PLASTIC
FRTW	FIRE RETARDANT TREATED WOOD
FRZ	FREEZER
FS	FIRE SPRINKLER
FS	FAR SIDE
FSTN	FASTEN, FASTENER
FT	FOOT/FEET
FTG	FOOTING
FURG	FURRED, (ING)
FWC	FABRIC WALL COVERING
G	
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GI	GALVANIZED IRON
GL	GLASS
GLULAM	GLUE LAMINATED
GLZ	GLAZING
GLZCMU	GLAZED CONRETE MASONRY UNIT
GND	GROUND
GPC	GYPSUM PLASTER CEILING
GR	GRADE
GRBM	GRADE BEAM
GRLN	GRADE LINE
GSB	GYPSUM SHEATHING BOARD
GSM	GALVANIZED SHEET METAL
GSS	GALVANIZED STEEL SHEET
GST	GLAZED STRUCTURAL TILE
GT	GROUT
GVL	GRAVEL
GYP	GYPSUM
GYP BD	GYPSUM BOARD
H	
HB	HOSE BIB
HC	HOLLOW CORE
HD	HEAVY DUTY
HDAS	HEADED ANCHOR STUD
HDJT	HEAD JOINT
HDR	HEADER
HDW	HARDWARE
HDWD	HARDWOOD
HEX	HEXAGONAL
HGR	HANGER
HLDN	HOLD DOWN
HM	HOLLOW METAL
HMD	HOLOW METAL DOOR
HMDF	HOLLOW METAL DOOR AND FRAME
HMF	HOLLOW METAL FRAME
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HOUR
HT	HEIGHT
HTG	HEATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATER
I	
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE(D), (ING)
INFO	INFORMATION
INSTL	INSTALL
INSUL	INSULATE(D), (ION)
INT	INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
ISA	INTERNATIONAL SYMBOL OF ACCESSIBILITY
J	
JAN	JANITOR
JST	JOIST
JT	JOINT
K	
KIT	KITCHEN
KO	KNOCKOUT
KPL	KICKPLATE
L	
LAB	LABORATORY
LAD	LADDER
LAM	LAMINATE
LAV	LAVATORY
LB(S)	POUND(S)
LBL	LABEL
LBR	LUMBER
LDR	LEADER
LF	LINEAL FOOT
LG	LENGTH, LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LKNT	LOCKNUT
LKR	LOCKER
LKWASH	LOCKWASHER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMST	LIMSTONE
LNSCP	LANDSCAPE(D)
LNTL	LINTEL
LP	LIGHTPROOF
LPT	LOW POINT
LT	LIGHT
LTWT	LIGHTWEIGHT
LV	LOUVER VENT
LVL	LEVEL(ER)
LWC	LIGHTWEIGHT CONCRETE
LWIC	LIGHTWEIGHT INSULATING CONCRETE
M	
MAINT	MAINTAIN(ANCE)
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MEDICINE CABINET
MCB	METAL CORNER BEAD
MDO	MEDIUM DENSITY OVERLAID
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFD	METAL FLOOR DECKING
MFR	MANUFACTUR(ER)
MH	MANHOLE
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
ML	METAL LATH
MLDG	MOLDING
MLWK	MILLWORK
MO	MASONRY OPENING
MOD	MODULE(AR)
MR	MOISTURE RESISTANT
MRB	MARBLE
MRD	METAL ROOF DECKING
MS	MACHINE SCREW
MTD	MOUNTED
MTL	METAL
MTR	MORTAR
MULL	MULLION
N	
(N)	NEW
N	NORTH
NAT	NATURAL
NCOMBL	NONCOMBUSTIBLE
NE	NOT EXCEEDING
NF	NEAR FACE
NIC	NOT IN CONTRACT
NLB	NON-LOAD BEARING
NM	NONMETALLIC
NO	NUMBER
NOM	NOMINAL
NR	NOISE REDUCTION
NRC	NOISE REDUCTION COEFFICIENT
NRCA	NATIONAL ROOFING CONTRACTOR'S ASSOCIATION
NS	NEAR SIDE
NTS	NOT TO SCALE
O	
O/	OVER
O/O	OUT TO OUT
OA	OVERALL
OBS	OBSCURE
OC	ON CENTER
OCC	OCCUPANTS OR OCCUPANCY
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OFS	OUTSIDE FACE OF STUD
OHMS	OVALHEAD MACHINE SCREW
OHWS	OVALHEAD WOOD SCREW
OI	OWNER INSTALLED
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OPQ	OPAQUE
OPR	OPERABLE
ORD	OVERFLOW ROOF DRAIN
OSB	ORIENTED STRAND BOARD
OVFL	OVERFLOW
OVHD	OVERHEAD
P	
P	PAINT
PA	PUBLIC ADDRESS
PAR	PARALLEL
PAT	PATTERN
PB	PANIC BAR
PBD	PARTICLE BOARD
PC	PORTLAND CEMENT
PCC	PRECAST CONCRETE
PCP	PORTLAND CEMENT PLASTER
PED	PEDESTAL
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PGBD	PEGBOARD
PH	PHASE
PHS	PHILLIPS HEAD SCREW
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PLATE, PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PM	PRESSED METAL
PMF	PRESSED METAL FRAME
PNEU	PNEUMATIC
PNL	PANEL
PNT	PAINT(ED)
POL	POLISHED
POLY	POLYETHYLENE
PORC	PORCELAIN
PORT	PORTABLE
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PREFMD	PREFORMED
PRKG	PARKING
PRML	PREMOLDED
PROJ	PROJECT
PROP	PROPERTY
PSCONC	PRESTRESSED CONCRETE
PT	POINT
PTD	PAPER TOWEL DISPENSER
PTDF	PRESSURE TREATED DOUGLAS FIR
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PVC	POLYVINYL CHLORIDE
PVG	PAVE(D), (ING)
PVMT	PAVEMENT
Q	
QT	QUARRY TILE
QTB	QUARRY TILE BASE
QTF	QUARRY TILE FLOOR
QTR	QUARTER
QTY	QUANTITY
R	
R	RISER
RA	RETURN AIR
RAB	RABBET
RAD	RADIUS
RB	RESILIENT BASE
RBR	RUBBER
RCP	REINFORCED CONCRETE PIPE
RCVR	RECEIVER
RD	ROOF DRAIN
RDWY	ROADWAY
REBAR	REINFORCING STEEL BARS
REC	RECESSED
RECT	RECTANGULAR
RECYL	RECYCLING
REF	REFERENCE
REFL	REFLECT(ED), (IVE), (OR)
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REM	REMOVE(ABLE)
REP	REPAIR
REPL	REPLACE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISION(S), REVISED
RF	RESILIENT FLOORING
RFG	ROOFING
RFH	ROOF HATCH
RGDINS	RIGID INSULATION
RH	RIGHT HAND
RHMS	ROUND HEAD MACHINE SCREW
RHR	RIGHT HAND REVERSE
RHWS	ROUND HEAD WOOD SCREW
RL	ROOF LEADER
RLG	RAILING
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RR	RESTROOM
RS	ROUGH SAWN
RTF	RUBBER TILE FLOORING
RTU	ROOF TOP UNIT
RV	ROOF VENT
RVL	REVEAL
RVS	REVERSE (SIDE)
RVT	RIVET(ED)
RWD	REDWOOD
RWL	RAIN WATER LEADER
S	
S	SOUTH
S2S	SURFACED TWO SIDES
S4S	SURFACED FOUR SIDES
SA	SUPPLY AIR
SALV	SALVAGE
SAM	SELF-ADHERED MEMBRANE
SAT	SUSPENDED ACOUSTICAL TILE
SB	SPLASH BLOCK
SBSTR	SUBSTRATE
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCP	SCUPPER
SCRN	SCREEN
SD	STORM DRAIN
SDBL	SANDBLAST
SEC	SECONDS
SECT	SECTION
SEP	SEPERATE OR SEPERATION
SF	SQUARE FEET, STOREFRONT
SGL	SINGLE
SHR	SHOWER
SHT	SHEET(ING)
SHTG	SHEATHING
SHV	SHELVES(ING)
SIM	SIMILAR
SK	SINK
SKLT	SKYLIGHT
SLD	SEALED
SLDG	SLIDE(ING)
SLDR	SOLDER
SLNT	SEALANT
SLV	SLEEVE
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
SMLS	SEAMLESS
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPENSER
SNDINS	SOUND INSULATION
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SNT	SEALANT
SP	SPACES
SPC	SUSPENDED PLASTER CEILING
SPD	SOAP DISPENSER
SPEC	SPECIFICATION(S)
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
ST	STREET
STA	STATION
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STG	SEATING
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRAIGHT
STRUC	STRUCTURAL
STU	STRUCT
SUSP	SUSPENDED
SV	SHEET VINYL
SYMM	SYMMETRICAL
SYNTH	SYNTHETIC
SYS	SYSTEM
T	
T	TEMPERED, TOILET, TREAD
T24	TITLE 24
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
TB	THRU BOLT
TBE	THREADED BOTH ENDS
TD	TOWEL DISPENSER
TDR	TOWEL DISPENSER/RECEPTACLE
TEL	TELEPHONE
TEMP	TEMPORARY
TER	TERRAZZO
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
THD	THREAD(ED)
THERM	THERMAL
THK	THICK
THRES	THRESHOLD
THRU	THROUGH
TKBD	TACKBOARD
TMPD	TEMPERED
TO	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CURB OR TOP OF CONCRETE
TOF	TOP OF FOOTING
TOFF	TOP OF FINISH FLOOR
TOJ	TOP OF JOIST
TOL	TOLERANCE
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOPV	TOP OF PAVEMENT
TOS	TOP OF SHEATHING
TOSL	TOP OF SLAB
TOST	TOP OF STEEL
TOW	TOP OF WALL OR TOP OF WALK
TPD	TOILET PAPER DISPENSER
TPTN	TOILET PARTITION
TRANS	TRANSITION
TS	TUBE STEEL
TV	TELEVISION
TWLB	TOWEL BAR
TYP	TYPICAL
U	
UC	UNDERCUT
UGND	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
URM	UNREINFORCED MASONRY
UTIL	UTILITY
V	
VAR	VARIES
VB	VINYL BASE
VCT	VINYL COMPOSITION TITLE
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VF	VINYL FABRIC
VFAT	VINYL FACED ACOUSTIC TILE
VIF	VERIFY IN FIELD
VJ	V-JOINT(ED)
VNR	VENEER
VR	VAPOR RETARDER
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	
W	WEST
W.O.	WHERE OCCURS
W/	WITH
W/O	WITHOUT
W/W	WALL TO WALL
WBL	WOOD BLOCKING
WC	WATER CLOSET
WD	WOOD
WDP	WOOD PANELING
WDW	WINDOW
WF	WIDE FLANGE
WFS	WOOD FURRING STRIP
WGL	WIRED GLASS
WH	WATER HEATER
WH	WALL HUNG
WI	WROUGHT IRON
WID	WIDTH, WIDE
WLD	WELD(ED)
WM	WIRE MESH
WP	WATERPROOF(ING)
WPT	WORKING POINT
WR	WIRE ROPE
WS	WOOD SCREW
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
X	
XBRACE	CROSS BRACE
XFMR	TRANSFORMER
XSECT	CROSS SECTION
Y	
YCO	YARD CLEANOUT
YD	YARD

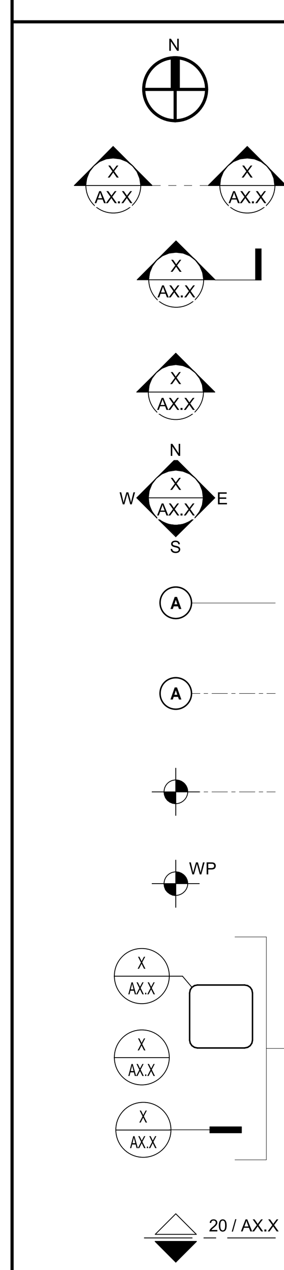
SUPPLEMENTAL GENERAL NOTES

1. THESE DRAWINGS DO NOT CONTAIN THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
2. LOCATIONS OF ALL UTILITIES SHOWN ARE APPROXIMATE AND CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID INTERCEPTING EXISTING PIPING OR CONDUITS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND TO PROTECT THEM FROM DAMAGE. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD ANY UNIDENTIFIED CONDITIONS BE DISCOVERED. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THIS WORK.
3. THESE DOCUMENTS AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF BCA ARCHITECTS, AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF BCA ARCHITECTS.
4. EACH BIDDER SHALL POSSESS AT THE TIME OF BID, A CLASS B OR THE APPROPRIATE CLASS C CONTRACTOR'S LICENSE PURSUANT TO PUBLIC CONTRACT CODE SECTION 3300 AND BUSINESS AND PROFESSIONS CODE SECTION 7028.15. THE SUCCESSFUL BIDDER MUST MAINTAIN THE LICENSE THROUGHOUT THE DURATION OF THIS CONTRACT.
5. FIRE SAFETY DURING CONSTRUCTION:
   A. GENERAL: FIRE SAFETY DURING CONSTRUCTION SHALL COMPLY WITH 2019 CALIFORNIA FIRE CODE (CFC) CHAPTER 33, PART 9, TITLE 24 CCR
   B. ACCESS ROADS: FIRE DEPARTMENT ACCESS ROADS SHALL BE ESTABLISHED AND MAINTAINED IN ACCORDANCE WITH CFC 503.
   C. WATER SUPPLY: WATER MAINS AND HYDRANTS SHALL BE OPERATIONAL IN ACCORDANCE WITH CFC 507.
   D. BUILDING ACCESS: ACCESS TO BUILDINGS FOR THE PURPOSE OF FIREFIGHTING SHALL BE PROVIDED. CONSTRUCTION MATERIAL SHALL NOT BLOCK ACCESS TO BUILDINGS, HYDRANTS OR FIRE APPLIANCES.
   E. ALTERATIONS OF BUILDINGS: SHALL COMPLY WITH APPLICABLE PROVISIONS OF SECTION CFC 1103.
   F. DEMOLITION OF BUILDINGS: SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF CFC CHAPTER 33.
   G. FIRE WATCH: MAINTAIN FIRE WATCH WHEN REQUIRED BY THE BUILDING OFFICIAL AND WHEN EXISTING FIRE PROTECTION SYSTEMS ARE SHUT DOWN FOR ALTERATIONS. FIRE WATCH SHALL REMAIN IN EFFECT UNTIL EXISTING FIRE PROTECTION SYSTEMS ARE RETURNED TO SERVICE OR AS ALLOWED BY THE BUILDING OFFICIAL.
6. PENETRATIONS IN FIRE RATED MATERIALS OR ASSEMBLIES SHALL BE RESTORED TO EQUAL RATING. FIRE STOP SYSTEMS AS LISTED BY UNDERWRITERS LABORATORIES SHALL BE INSTALLED PER FIRE RESISTANCE DIRECTORY. FIRE STOP SYSTEMS SHALL BE AS SPECIFIED.
7. NONRESIDENTIAL ENERGY STANDARDS COMPLIANCE STATEMENT (TITLE 24, PART 6):
   A. THE DESIGN INDICATED HEREIN COMPLIES WITH THE REQUIREMENTS OF THE ENERGY CONSERVATION STANDARDS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THE PROPOSED BUILDINGS WILL BE IN COMPLIANCE WITH THE ENERGY CONSERVATION STANDARDS PROVIDED THEY ARE BUILT ACCORDING TO THESE DRAWINGS AND SPECIFICATIONS AND PROVIDED ANY FUTURE IMPROVEMENTS ARE COMPLETED ACCORDING TO THE REQUIREMENTS OF TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS. THESE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO INCLUDE ALL SIGNIFICANT ENERGY CONSERVATION FEATURES REQUIRED FOR COMPLIANCE WITH THE STANDARDS. BUILDING AREAS THAT ARE UNCONDITIONED AND/OR NOT SUBJECT TO THE STANDARDS ARE INDICATED ON THE DRAWINGS.
   B. ENVELOPE MANDATORY MEASURES:
      A. INSTALLED INSULATING MATERIALS SHALL HAVE BEEN CERTIFIED BY THE MANUFACTURER TO COMPLY WITH THE CALIFORNIA QUALITY STANDARDS FOR INSULATING MATERIAL.
      B. ALL INSULATING MATERIALS SHALL BE INSTALLED IN COMPLIANCE WITH THE FLAME SPREAD RATING AND SMOKE DENSITY REQUIREMENTS OF TITLE 24, PART 2, CALIFORNIA CODE OF REGULATIONS, SECTIONS 719
      C. ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE POTENTIAL AND OBSERVABLE SOURCES OF AIR LEAKAGE SHALL BE CAULKED, GASKETED, WEATHERSTRIPPED OR OTHERWISE SEALED.
      D. SITE CONSTRUCTED DOORS, WINDOWS, AND SKYLIGHTS SHALL BE CAULKED BETWEEN THE UNIT AND THE BUILDING, AND SHALL BE WEATHERSTRIPPED (EXCEPT FOR UNFRAMED GLASS DOORS AND FIRE DOORS).
      E. MANUFACTURED DOORS AND WINDOWS INSTALLED SHALL HAVE AIR INFILTRATION RATES CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH TITLE 24, PART 6, CALIFORNIA CODE OF REGULATIONS, SECTION 116(a)1.
      F. MANUFACTURED FENESTRATION PRODUCTS IN THE ENVELOPE OF THE BUILDING, INCLUDING, BUT NOT LIMITED TO, WINDOWS, SLIDING GLASS DOORS, FRENCH DOORS, SKYLIGHTS, CURTAIN WALLS, AND GARDEN WINDOWS MUST BE LABELED FOR U-VALUE IN ACCORDANCE WITH THE (NFRC) NATIONAL FENESTRATION RATING COUNCIL'S INTERIM U-VALUE RATING PROCEDURE.
      G. DEMISING WALL INSULATION SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF FRAMED WALLS (EXCEPT DOORS).
8. PROOF LOAD TESTS FOR EXPANSION TYPE ANCHOR BOLTS:
   A. ANCHOR DIAMETER REFERS TO THE THREAD SIZE FOR THE WEDGE CATEGORY AND TO THE ANCHOR OUTSIDE DIAMETER FOR THE SLEEVE CATEGORY.
   B. APPLY PROOF TEST LOADS TO WEDGE & SLEEVE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
   C. FOR SLEEVE INTERNALLY THREADED CATEGORIES, VERIFY THAT THE ANCHOR IS NOT PREVENTED FROM WITHDRAWING BY A BASEPLATE OR OTHER FIXTURES. IF RESTRAINT IS FOUND, LOOSEN AND SHIM OR REMOVE FIXTURE(S) PRIOR TO TESTING.
   D. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
   E. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
   F. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
      1. HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE. DROP-IN ANCHORS ARE ONLY TO BE TESTED WITH THIS METHOD.
      2. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS: WEDGE OR SLEEVE TYPE: ONE-HALF (1/2) TURN OF THE NUT. ONE-QUARTER (1/4) TURN OF THE NUT FOR THE 3/8 IN. SLEEVE ANCHOR ONLY.
   G. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
   H. ALL ANCHOR BOLTS OF THE EXPANSION TYPE (LOADED IN EITHER PULLOUT OR SHEAR) SHALL HAVE 50 PERCENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT ALLOWED BY THE TYPE OF SUBSTRATE AND DIAMETER OF BOLT LISTED BELOW UNDER TEST VALUES TABLE) PROOF TESTED IN TENSION TO TWICE THE ALLOWABLE TENSION LOAD. IF THERE ARE ANY FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 1910A.5.
   I. ALL BOLTS MUST HAVE ICC APPROVAL.
   J. ALL ANCHOR BOLTS OF THE EXPANSION TYPE SHALL BE ONE OF THE FOLLOWING:
      1. HILTI KB-TZ ANCHOR ICC NO. ESR 1917, REISSUED MAY 2021, SUBJECT TO RENEWAL MAY 2022
      2. HILTI KWIK BOLT TZ2, ESR-4266, SUBJECT TO RENEWAL DECEMBER 2021

MINIMUM TEST VALUES				
NORMAL WEIGHT OR LIGHTWEIGHT CONCRETE				
ANCHOR	WEDGE		SLEEVE	
DIA. (IN)	TORQUE (FT-LBS)	TORQUE (FT-LBS)	TENSION LOAD (LBS)	TORQUE (FT-LBS)
1/4	1050	5	540	4
3/8	1740	15	1680	35
1/2	1860	30	2410	60
5/8	3290	75	2590	100
3/4	5490	150	2900	120

9. POWDER-DRIVEN CONCRETE FASTENERS:
   A. GENERAL: USE POWDER DRIVEN CONCRETE FASTENERS FOR TENSION LOADS IS LIMITED TO SUPPORT OF MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT.
   B. ALLOWABLE LOADS: IN GENERAL, LOADS SHOULD BE LIMITED TO LESS THAN 100 POUNDS. HOWEVER GREATER LOADS MAY BE PERMITTED FOR SPECIAL CASES WHEN APPROVED BY THE CHECKING SUPERVISOR OR FIELD ENGINEER.
   C. TESTING: THE OPERATOR, TOOL, AND FASTENER SHALL BE PREQUALIFIED BY THE PROJECT INSPECTOR. HE SHALL OBSERVE THE TESTING OF THE FIRST 10 FASTENER INSTALLATIONS. A TEST "PULL-OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD, OR 200 POUNDS, WHICHEVER IS GREATER, SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS, EXCEPT THAT WHEN THE DESIGN LOAD EXCEEDS 100 POUNDS, ONE HALF OF THE PINS SHALL BE TESTED. SHOULD FAILURE OCCUR ON ANY PIN TESTED, ALL INSTALLATIONS MUST BE TESTED AND UNFAIR PINS REPLACED.
   D. ALL POWDER DRIVEN CONCRETE FASTENERS SHALL BE ONE OF THE FOLLOWING: HILTI, INC.
      1. DN PINS - WOOD PLATE - ICC NO. ESR 2379, REISSUED AUGUST 2020
         DN PINS - STEEL TRACK - ICC NO. ESR 2269, REISSUED FEBRUARY 2021
      2. ITW RAMSET/REDHEAD DRIVE PIN - WOOD PLATE - ICC NO. ESR 2690
         DRIVE PIN - STEEL TRACK - ICC NO. ESR 1955, REVISED MAY 2021
10. SPECIFICATIONS FOR AUTOMATIC END WELDED STUDS
   A. MATERIAL: AUTOMATIC END WELDED STUDS SHALL BE NELSON GRANULAR FLUX-FILLED SHEAR CONNECTOR OR ANCHOR STUDS (OR APPROVED EQUAL). STUDS SHALL BE MANUFACTURED OF G-1015 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A108.
   B. INSTALLATION: THE STUDS SHALL BE AUTOMATICALLY END WELDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN SUCH A MANNER AS TO PROVIDE COMPLETE FUSION BETWEEN THE END OF THE STUD AND THE PLATE. THERE SHOULD BE NO POROSITY OR EVIDENCE OF LACK OF FUSION BETWEEN THE WELDED END OF THE STUD AND THE PLATE. THE STUD SHALL DECREASE IN LENGTH DURING WELDING APPROXIMATELY 1/8" FOR 5/8" AND UNDER, AND 3/16" FOR OVER 5/8" DIAMETER. WELDING SHALL BE DONE ONLY BY QUALIFIED WELDERS APPROVED BY THE WELDING INSPECTOR.
   C. INSPECTION AND TESTS: INSPECTION, IN ACCORDANCE WITH TITLE 24, PART 2, SECTION 2212A.3 AND 1704A.3.1 OF ALL THE SHOP AND FIELD WELDING OPERATIONS FOR THE AUTOMATIC END WELDED STUDS SHALL BE MADE BY A QUALIFIED WELDING INSPECTOR (APPROVED BY THE DIVISION OF THE STATE ARCHITECT). THE TYPE AND CAPACITY OF THE WELDING EQUIPMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE CHECKED AND APPROVED BY A WELDING INSPECTOR.
   D. AT THE BEGINNING OF EACH DAY'S WORK, A MINIMUM OF TWO TEST STUD WELDS SHALL BE MADE WITH THE EQUIPMENT TO BE USED TO METAL WHICH IS THE SAME AS THE ACTUAL WORK PIECE. THE TEST STUDS SHALL BE BEND TEST BY STRIKING THEM WITH A SUBJECTED TO A 900 HEAVY HAMMER. AFTER THE ABOVE TEST, THE WELD SECTION SHALL NOT EXHIBIT ANY TEARING OUT OR CRACKING.

SYMBOLS



N = PLAN NORTH ARROW
ADDITIONAL ARROW INDICATES TRUE NORTH

X = BUILDING SECTION NUMBER
AX.X = SHEET NUMBER

X = WALL SECTION NUMBER
AX.X = SHEET NUMBER

X = EXTERIOR ELEVATION NUMBER
AX.X = SHEET NUMBER

X = INTERIOR ELEVATION NUMBER
AX.X = SHEET NUMBER
N,S,E,W = INDICATES CARDINAL DIRECTION

GRID LINE, FACE OF STRUCTURE

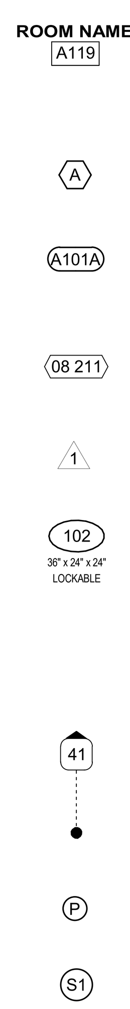
GRID LINE, CENTER OF STRUCTURE

ELEVATION OR DATUM POINT

WORK POINT

REFERENCE DETAIL
X = DETAIL DRAWING NUMBER
AX.X = SHEET NUMBER

MATCH LINE AND AREA DESIGNATOR
SHADED PORTION IS THE SIDE CONSIDERED



ROOM NAME
AREA IDENTIFICATION:
A = BUILDING OR AREA DESIGNATION
1 = FLOOR NUMBER
19 = ROOM NUMBER

WINDOW, STOREFRONT, OR CURTAINWALL
SEE WINDOW SCHEDULE

DOOR NUMBER, SEE DOOR SCHEDULE

KEYNOTE
08 = SPECIFICATION DIVISIONAL PREFIX
2 = SPECIFICATION SUBSECTION PREFIX
11 = NOTE NUMBER

REVISION

CASEWORK TAG
102 = ARCHITECTURAL WOODWORK STANDARD (AWS) NUMBER
36" x 24" x 24" = WIDTH x HEIGHT x DEPTH
LOCKABLE = MODIFYING NOTE

NOTE: FOR BASE CABINETS, HEIGHT DOES NOT INCLUDE COUNTERTOP THICKNESS - REFER TO PLANS FOR COUNTERTOP TYPE

PATH OF EGRESS
41 = OCCUPANT LOAD
STARTING POINT OF PATH OF TRAVEL TO EXIT
MARKED BY DOT AT THE BEGINNING OF EGRESS LINE

PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP

SIGNAGE TAG

GENERAL NOTES

1. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AND SHALL HAVE VISITED THE CONSTRUCTION SITE. HE/SHE SHALL BE FAMILIAR WITH THE CONDITIONS UNDER WHICH HE/SHE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. THE GENERAL CONTRACTOR SHALL NOT DISPUTE, COMPLAIN OR ASSERT THAT THERE IS ANY MISUNDERSTANDING IN REGARDS TO LOCATION, EXTENT, NATURE OR AMOUNT OF WORK TO BE PERFORMED UNDER THIS CONTRACT DUE TO THE CONTRACTOR'S FAILURE TO INSPECT THE SITE. BIDDERS SHALL NOTIFY THE ARCHITECT OF ANY CONDITIONS, REQUIRING WORK, WHICH ARE NOT COVERED IN THE CONTRACT DOCUMENTS.
2. THERE WILL BE NO SUBSTITUTION FOR SPECIFIED ITEMS WITHOUT PRIOR APPROVAL UNLESS OTHERWISE NOTED. REQUESTS FOR SUBSTITUTIONS SHALL BE MADE IN ACCORDANCE WITH GENERAL CONDITIONS & DIVISION 1
3. THE GENERAL BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS REQUIRED BY GOVERNING AGENCIES IN ORDER TO PERFORM THE WORK.
4. THE FINAL LOCATION OF ALL ELECTRICAL AND SIGNAL EQUIPMENT, PANEL BOARDS, FIXTURES, ETC., SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION.
5. DEFINITIONS
   A. "TYPICAL" MEANS IDENTICAL FOR ALL CONDITIONS, UNLESS OTHERWISE NOTED.
   B. "SIMILAR" MEANS COMPARABLE CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATIONS.
   C. "PROVIDE" MEANS TO FURNISH AND INSTALL.
   D. "FURNISH" MEANS TO FURNISH AND OTHERS WILL INSTALL.
6. DIMENSIONING RULES:
   A. ALL HORIZONTAL DIMENSIONS SHALL BE TO CENTERLINE OF STUD OR COLUMN GRID LINE, U.O.N
   B. DIMENSIONS NOTED "CLEAR", "CLR", OR "MINIMUM", "MIN" MUST BE PRECISELY MAINTAINED.
   C. DIMENSIONS CAN NOT BE MODIFIED WITHOUT APPROVAL OF THE ARCHITECT UNLESS OTHERWISE NOTED.
   D. VERTICAL DIMENSIONS ARE FROM TOP OF FLOOR SLAB UNLESS OTHERWISE NOTED.
   E. DO NOT SCALE DRAWINGS. IF ANY ITEM OF WORK CANNOT BE LOCATED, DO NOT PROCEED WITH THE WORK WITHOUT THE ARCHITECT'S APPROVAL.
   F. DIMENSIONS MARKED "V.I.F." OR "VERIFY" SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
   G. VERIFY ALL ROUGH OPENING DIMENSIONS FOR FABRICATED ITEMS WITH THE MANUFACTURER PRIOR TO PROCEEDING WITH CONSTRUCTION.
   H. DOOR AND WINDOW OPENINGS SHALL BE LOCATED ADJACENT TO PERPENDICULAR WALL UNLESS DIMENSIONED OTHERWISE.
7. PROVIDE REQUIRED BACKING, BLOCKING, AND BRACING FOR ALL WALL - MOUNTED FIXTURES, ACCESSORIES AND EQUIPMENT.
8. VERIFY AND COORDINATE WALLS THAT MAY REQUIRE NON-TYPICAL THICKNESS OR FRAMING DUE TO ELECTRICAL, MECHANICAL, PLUMBING, STRUCTURAL AND/OR EQUIPMENT REQUIREMENTS.
9. ALL GLAZING SHALL CONFORM TO FEDERAL GLAZING REGULATIONS AND CHAPTER 24, CBC.
10. ALL CONTRACTORS SHALL REMOVE TRASH AND DEBRIS STEMMING FROM THEIR WORK ON A DAILY BASIS. PROJECT SITE SHALL BE MAINTAINED IN A CLEAN AND ORDERLY CONDITION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL LEFT-OVER MATERIALS, DEBRIS, TOOLS AND EQUIPMENT INVOLVED IN HIS OPERATIONS AT THE CONCLUSION OF THE INSTALLATION. HE SHALL LEAVE ALL AREAS CLEAN AND FREE FROM DUST.
12. HAZARDOUS MATERIALS: THE ARCHITECT AND THE ARCHITECT'S CONSULTANTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL, DISPOSAL OF OR EXPOSURE OF PERSONS TO ASBESTOS OR HAZARDOUS OR TOXIC SUBSTANCES IN ANY FORM AT THE PROJECT SITE. PROFESSIONAL SERVICES RELATED OR IN ANY WAY CONNECTED WITH THE INVESTIGATION, DETECTION, ABATEMENT, REPLACEMENT, USE, SPECIFICATION, OR REMOVAL OF PRODUCTS, MATERIALS, OR PROCESSES CONTAINING ASBESTOS OR HAZARDOUS OR TOXIC MATERIALS ARE BEYOND THE SCOPE OF THIS AGREEMENT.
13. THE GENERAL CONTRACTOR & SUBCONTRACTORS ARE RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES IN ALL AREAS OF NEW WORK PRIOR TO COMMENCEMENT OF EXCAVATION. EXISTING UTILITIES SHOWN ON THE DRAWING ARE APPROXIMATE ROUTING LOCATION AS BEST DETERMINED FROM EXISTING DRAWINGS AND THE SCHOOL DISTRICT, BUT SHOULD NOT BE CONSTRUED TO REPRESENT ALL THE EXISTING UNDERGROUND UTILITIES.
14. ALL TEMPORARY WORK SHALL BE CONSIDERED A PART OF THIS CONTRACT AND NO EXTRA CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS AND INTENT OF THE PROJECT.
15. ALL WALL PENETRATIONS TO EXTERIOR WALLS SHALL BE SEALED AIR/WATER TIGHT. ALL INTERIOR PENETRATIONS SHALL BE SEALED TO PROVIDE A PROFESSIONAL AND FINISHED APPEARANCE.
16. THE DRAWINGS AND SPECIFICATIONS DO NOT UNDERTAKE TO SHOW OR LIST EVERY ITEM TO BE PROVIDED, BUT RATHER TO DEFINE THE REQUIREMENTS FOR A FULL AND WORKING SYSTEM FROM THE STANDPOINT OF THE END USER. FOR THIS REASON, WHEN AN ITEM NOT SHOWN OR LISTED IS CLEARLY NECESSARY FOR PROPER USE CONTROL/ OPERATION OF EQUIPMENT WHICH IS SHOWN OR LISTED, PROVIDE ALL ITEMS WHICH WILL ALLOW THE SYSTEM TO FUNCTION PROPERLY AT NO INCREASE IN CONTRACT PRICE ON TIME.
17. THE DETAILS REFLECT THE DESIGN INTENT FOR TYPICAL CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND SHALL INCLUDE, IN HIS SCOPE. THE COST FOR COMPLETE FINISHED INSTALLATIONS, INCLUDING ANOMALIES, OF ALL TRADES.
18. ALL WORK SHALL CONFORM TO CALIFORNIA CODES, TRADE STANDARDS WHICH GOVERN EACH PHASE OF THE PROJECT, AND ALL APPLICABLE LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
19. THIS DRAWING SET SHALL BE USED IN CONJUNCTION WITH THE CSI FORMAT PROJECT MANUAL PUBLISHED IN BOOK FORM, COMBINED, THEY ARE THE "CONTRACT DOCUMENTS".
20. NO WORK SHALL COMMENCE WITH UNAPPROVED MATERIALS. ANY WORK DONE WITH UNAPPROVED MATERIALS AND EQUIPMENT IS AT THE CONTRACTOR'S RISK. SEE SPECIFICATIONS FOR SUBMITTAL AND SUBSTITUTION REQUIREMENTS.
21. CONSTRUCTION MATERIAL STORED ON THE SITE SHALL BE PROPERLY STACKED AND PROTECTED TO PREVENT DAMAGE OR DETERIORATION. FAILURE IN THIS REGARD MAY BE CAUSE FOR REJECTION OF MATERIAL AND/OR WORK. SECURITY OF MATERIALS ARE THE SOLE RESPONSIBILITY OF CONTRACTOR.
22. ALL EQUIPMENT/CABINETS SHALL BE FABRICATED FROM FIELD VERIFIED DIMENSIONS AND APPROVED SHOP DRAWINGS. COORDINATE MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT WITH THIS WORK.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE AND COSTS ATTRIBUTED TO RAIN WATER DAMAGE DURING THE DURATION OF THIS PROJECT.
24. PROTECT AREAS FROM DAMAGE WHICH MAY OCCUR DUE TO TEMPERATURES, WIND, DUST, WATER, ETC. PROVIDE AND MAINTAIN TEMPORARY BARRICADES, CLOSURE WALLS, ETC., AS REQUIRED DURING CONSTRUCTION.
25. MAINTAIN EXISTING PEDESTRIAN ACCESS ALONG EXISTING ADJACENT STREETS.
26. ALL PUBLIC IMPROVEMENTS SHALL BE MADE IN ACCORDANCE WITH THE LATEST ADOPTED CITY/COUNTY STANDARDS.
27. ALL TYPICAL DETAILS SHALL APPLY UNLESS NOTED OTHERWISE.
28. NOTIFY THE ARCHITECT IN WRITING AND SEEK CLARIFICATION IF ANY DISCREPANCIES OR OMISSIONS ARE FOUND. CONTRACTOR SHALL BE RESPONSIBLE FOR REMEDIAL WORK IF RELATED WORK IS CONTINUED AFTER A DISCREPANCY IS IDENTIFIED.
29. NEW FINISHES AND CONSTRUCTION SHALL BE PROTECTED BY THE CONTRACTOR FROM POTENTIAL DAMAGE CAUSED BY CONSTRUCTION ACTIVITY. DAMAGE TO FINISHES OR CONSTRUCTION SHALL BE REPAIRED OR REPLACED (OWNER'S DECISION) BY THE CONTRACTOR WITH IDENTICAL MATERIAL AND/OR FINISHES. CONTRACTOR SHALL MAKE AND MAINTAIN A PHOTOGRAPHIC RECORD NOTEBOOK WITH DATED/INDEXED PHOTOGRAPHS.
30. SEE ELECTRICAL DRAWINGS FOR INFORMATION RELATED TO TELECOMMUNICATION EQUIPMENT, POWER, AND LIGHTING FIXTURES AND EQUIPMENT. SEE ARCHITECTURAL PLANS, REFLECTED CEILING PLAN AND INTERIOR ELEVATIONS FOR COORDINATED EQUIPMENT LOCATIONS. IF NOT SHOWN, CONTACT ARCHITECT FOR REVIEW AND DECISION.
31. PROVIDE ACCESS DOORS REQUIRED FOR ACCESS TO CONCEALED MECHANICAL, PLUMBING, AND ELECTRICAL EQUIPMENT.
32. ALL NOTED WORK IS UNDERSTOOD TO BE NEW, UNLESS LABELED AS "(E)" OR "EXISTING"
33. CONTRACTOR OPERATIONS SHALL NOT BLOCK, HINDER, IMPEDE, OR OTHERWISE INHIBIT THE USE OF REQUIRED EXITS AT ANY TIME. CONTRACTORS SHALL MAINTAIN UNOBSTRUCTED ACECESS TO FIRE EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE PROTECTION FACILITIES, STAIRWAYS AND OTHER ACCESS ROUTES FOR FIER-FIGHTING EQUIPMENT OR PERSONNEL.
34. ALL WORK SHALL COMPLY WITH CFC CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT · BRIAN P WHITMORE · No. C 30345 · Ren. 9/30/23 · STATE OF CALIFORNIA · DATE SIGNED: 03/04/2022	

GENERAL NOTES
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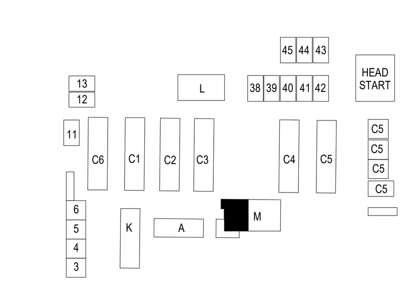
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

GENERAL NOTES AND ABBREVIATIONS

Date	Project Number
03/04/2022	21030
Application Number	Drawing Number
04-120689	A0.2
Drawn: Author	Checked: Checker

PRINT DATE: 3/6/2022 5:07:01 PM
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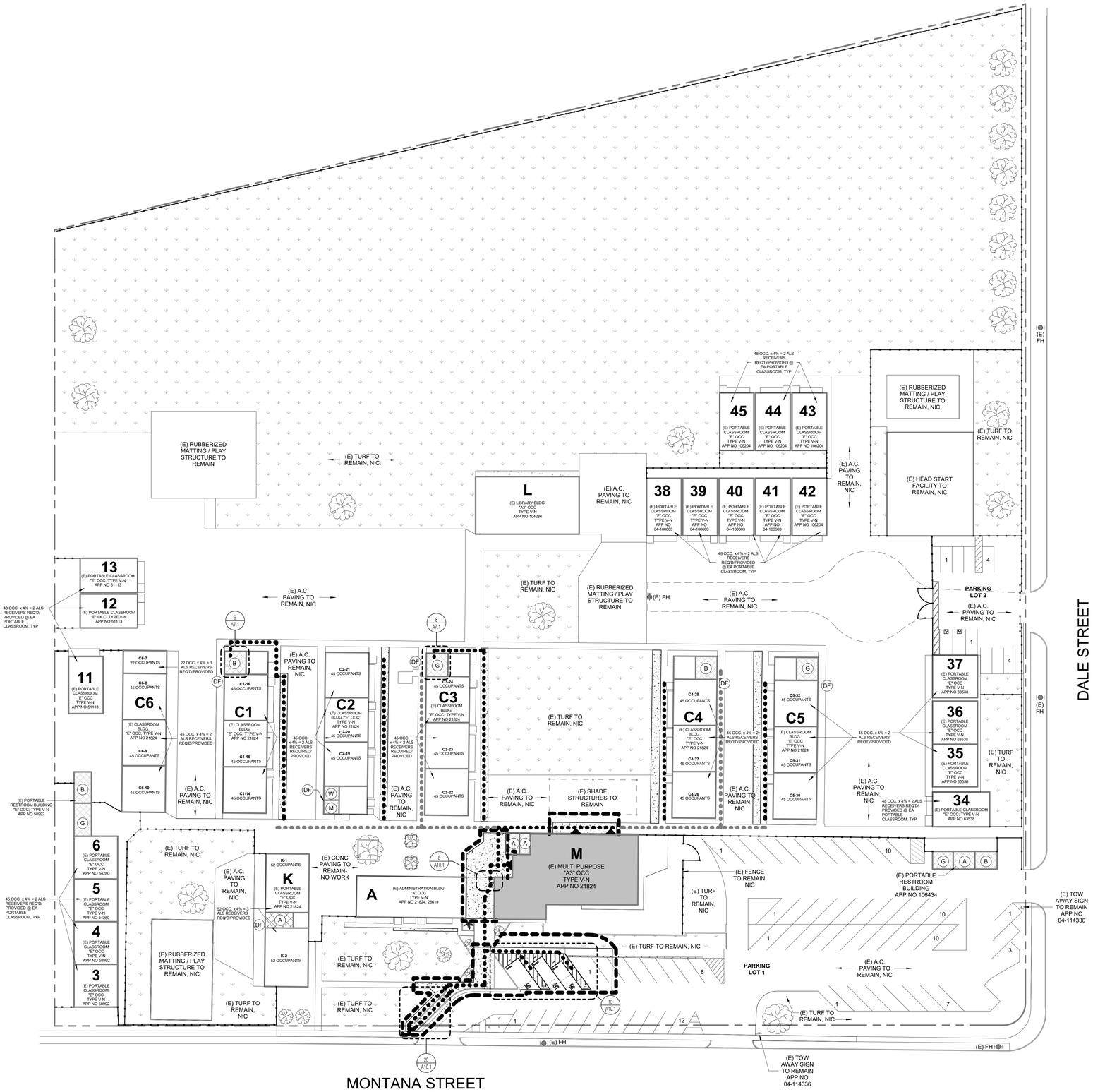

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

(BASED ON DSA PROCEDURE PR 15-01)

THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT WITH THE CBC HAVE BEEN IDENTIFIED AND THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THE ITEMS SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

GENERAL NOTES

1. ALL (E) STRUCTURES AND ITEMS ON SITE ARE APPROXIMATE BASED ON DRAWINGS FROM OWNER.
2. ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAX. SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX, AND AT LEAST 48" WIDE. SURFACE IS STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
3. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80". SEE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT ON THIS SHEET FOR ADDITIONAL POT REQUIREMENTS.
4. ALL SIDEWALKS ALONG THE ACCESSIBLE ROUTE TO BE A MINIMUM OF 4'-0" WIDE, AND THERE SHALL BE NO DROP-OFFS OVER 4" AT EDGE OF WALK OR LANDING. WHERE A 4" DROP-OFF DOES OCCUR, PROVIDING A 6" HIGH WARNING CURB OR GUARD OR HANDRAIL. (SEE CBC SECTION 11B-303.5)
5. GATES ALONG ACCESSIBLE ROUTE SHALL MEET DOOR REQUIREMENTS PER CBC SECTION 11B-404 INCLUDING PANIC HARDWARE AND 10" MIN. SMOOTH BOTTOM OR KICK PLATE.
6. FOR GRATINGS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WALKWAY IN THE PATH OF TRAVEL, GRID/OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" MAXIMUM IN THE DIRECTION OF TRAFFIC FLOW.
7. 36" WIDE CONTINUOUS DETECTABLE WARNING SHALL BE USED WHERE THE PEDESTRIAN PATH CROSSES OR ADJOINS A VEHICULAR WAY (SUCH AS A DRIVEWAY) TO WARN OF POTENTIAL HAZARDS AS PER CBC 11B-705.
8. ALL EXTERIOR OUTWARD SWINGING DOORS TO HAVE A MINIMUM 5'-0" LEVEL LANDING.
9. ALL BUILDING ENTRANCES AND EXTERIOR GROUND LEVEL EXITS SHALL BE ACCESSIBLE.
10. "MANUAL CANE BOLTS, MANUALLY LOCKING HARDWARE OR CHAINS NOT ALLOWED ON GATES WITH PANIC HARDWARE"

ACCESSIBLE PARKING

BASED ON CBC TABLE 11B-208.2 "PARKING SPACES" AND 11B-208.2.4 "VAN PARKING SPACES"

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES	MINIMUM NUMBER OF REQUIRED VAN PARKING SPACES
1 TO 25	1	1 FOR EVERY SIX OR FRACTION OF SIX PARKING SPACES REQ'D BY CBC 11B-208.2
26 TO 50	2	
51 TO 75	3	
76 TO 100	4	
101 TO 150	5	

(E) PARKING LOT 1		
TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
60	3 REQ'D/3 PROVIDED	1 REQ'D/1 PROVIDED

(E) PARKING LOT 2		
TOTAL STANDARD PARKING STALLS	NO. OF STD ACCESSIBLE PARKING STALLS REQ'D/PROVIDED	NO. OF VAN ACCESSIBLE PARKING STALLS REQ'D/PROVIDED
10	1 REQ'D/1 PROVIDED	1 REQ'D/1 PROVIDED

DSA APPLICATION CERTIFICATION

BUILDING NO	APP NO	CERTIFICATION STATUS
A	21824	
	28619	
M	21824	
C1, C2, C3, C4, C5, K	21824	
	04-114336	1/17/2018
C6	51113	4/15/1991
	04-114336	1/17/2018
PORTABLE CLASSROOMS	54280	1/30/2015
PORTABLE CLASSROOM	51113	4/15/1991
PORTABLE CLASSROOM	04-100603	6/2/1999
PORTABLE CLASSROOM	04-100844	5/7/1999
PORTABLE CLASSROOM	106204	1/31/2014
PORTABLE CLASSROOM	63538	1/14/2015
PORTABLE CLASSROOM	58992	11/17/1995
PORTABLE TOILETS	58992	11/17/1995
PORTABLE TOILET	106434	1/31/2014
LIBRARY	104286	12/18/2003

LEGEND

(E) BUILDING, NOT UNDER SCOPE OF WORK

BUILDING UNDER SCOPE OF WORK

RESTROOM FACILITIES

G GIRLS' W GIRLS' A ALL-GENDER
B BOYS' M BOYS' DF (E) ACCESSIBLE DRINKING FOUNTAIN TYPE AND APP # 04-114336

CONCRETE SIDEWALK EXTENSION PER 7 / A10.1

NOTE:
SCOPE INDICATED IS CORRECTIVE WORK AS REQ'D TO PROVIDE AN ACCESSBLE PATH OF TRAVEL FOR DSA APP NO 04-114336

LIMIT OF WORK

PROPERTY LINE

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHER-WISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAIN-TAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MIN. AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

(E) ACCESSIBLE PATH OF TRAVEL PER A#04-114336

ACCESSIBLE EXTERIOR EXIT DOORS, ENTRANCES/EGRESS

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum Center Drive, Suite 1640
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE NO. C 30345 EXP. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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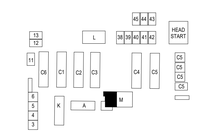
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

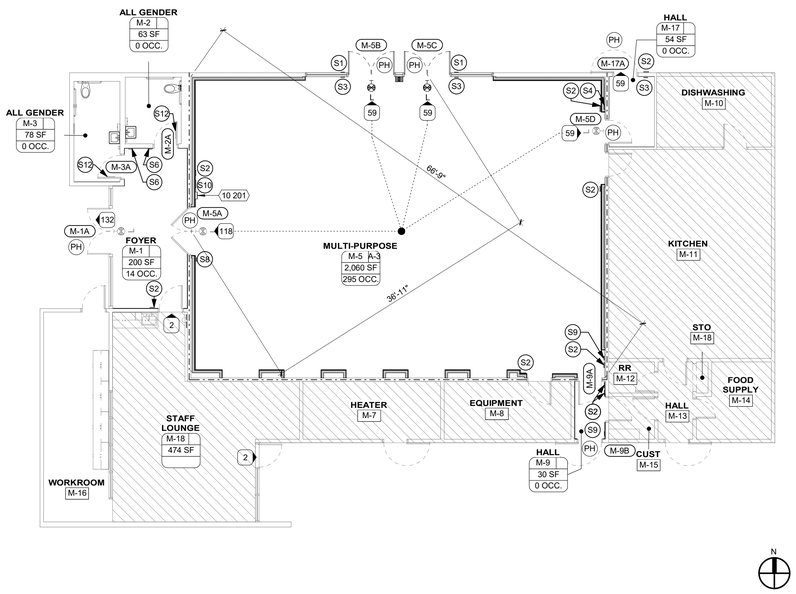
WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

CODE ANALYSIS SITE PLAN

Date	Project Number
03/04/2022	21030
Application Number	**Drawing Number**
04-120689	A0.3
Drawn	Checked
Author	Checker

PRINT DATE: 3/6/2022 5:07:04 PM
FILE PATH: C:\Users\gillanc\Documents\21030-Buena Park USD-Whitaker-MPR-A19_gillancAVNS5V.rvt

CODE ANALYSIS SITE PLAN | 1" = 30'-0" | 10



GENERAL NOTES

1. WHERE OCCUPANT LOAD SIGN IS REQUIRED, THE SIGN SHALL BE POSTED NEAR THE MAIN EXIT FROM THE ROOM.
2. REQUIRED MEANS OF EGRESS SHALL BE MAINTAINED DURING CONSTRUCTION AND DEMOLITION PER CFC 3311.2.
3. MEANS OF EGRESS ILLUMINATION SHALL BE PROVIDED PER CFC 1013.3.
4. NUMBER OF EXITS SHOWN COMPLY WITH THE MINIMUM REQUIREMENTS SET FORTH IN CBC SECTION 1006.2. WHEN THERE ARE MORE THAN ONE REQUIRED EXIT, THE EXITS SHALL BE LOCATED PER SECTION 1007.1.1. SEE CALCS BELOW.
5. NO EXIT DOOR SHALL BE LESS THAN 32" CLEAR WIDTH.

OCCUPANCY CLASS

ROOM #	ROOM NAME	OCCUPANCY CLASS	SQ. FT. (NET)
C3	GIRLS		182 SF
C4	BOYS		197 SF
M-1	FOYER		200 SF
M-2	ALL GENDER		63 SF
M-3	ALL GENDER		78 SF
M-17	HALL		54 SF
M-18	STAFF LOUNGE		474 SF
			1,248 SF
M-5	MULTI-PURPOSE	A-3	2,060 SF
A-3			2,060 SF
TOTAL AREA (NET)			3,308 SF

OCCUPANT LOAD CHART

ROOM NUMBER	ROOM NAME	FUNCTION OF SPACE (CBC TABLE 1004.1.2)	SQ. FT. (NET)	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
M-1	FOYER	(none)	200 SF	15	14
M-2	ALL GENDER	(none)	63 SF	0	
M-3	ALL GENDER	(none)	78 SF	0	
M-5	MULTI-PURPOSE	Assembly Concentrated (chairs only - not fixed)	2,060 SF	7	295
M-17	HALL	(none)	54 SF	0	
			2,456 SF		309

EXIT WIDTH CALCULATIONS

NOTE: EXIT WIDTH CALCULATIONS ARE PER CBC 1005.3.2. IF CALCULATED EXITING WIDTH IS LESS THAN 32", THEN 32" IS USED AS THE MINIMUM VALUE PER CBC 11B-403.5.1 (EXCEPTION 1). REFER TO "EXIT WIDTH PROVIDED" COLUMN BELOW AND DOOR SCHEDULE ON SHEET A9.1 FOR MORE INFORMATION.

MARK	DOOR WIDTH	EXITING OCCUPANTS	MINIMUM EXIT WIDTH REQUIRED (EXITING OCCUPANTS *.2)	EXIT WIDTH PROVIDED
M-1A	6'-0"	132	32"	72"
M-2A	3'-0"	0	32"	36"
M-3A	3'-0"	0	32"	36"
M-5A	6'-0"	118	32"	72"
M-5B	6'-0"	59	32"	72"
M-5C	6'-0"	59	32"	72"
M-5D	3'-0"	59	32"	36"
M-9A	3'-0"	0	32"	36"
M-9B	3'-0"	0	32"	36"

SIGNAGE LEGEND

- S1 ACCESSIBLE ENTRANCE SIGN, SEE DETAIL 8 / A10.3
- S2 ROOM IDENTIFICATION SIGN, SEE DETAIL 10 / A10.3
- S3 EXIT SIGN, SEE DETAIL 11 / A10.3
- S4 EXIT ROUTE SIGN, SEE DETAIL 12 / A10.3
- S5 MAXIMUM OCCUPANCY SIGN, SEE DETAIL 13 / A10.3
- S6 ALL GENDER WALL MOUNTED SIGN, SEE DETAIL
- S7 ALL GENDER DOOR SIGN, SEE DETAIL 15 / A10.3
- S8 ASSISTIVE LISTENING DEVICE SIGN, SEE DETAIL 19 / A10.3
- S9 INACCESSIBLE EXIT SIGN, SEE DETAIL 20 / A10.3
- S10 OCCUPANT LOAD SIGN SIGN, SEE DETAIL 18 / A10.3

ALS DEVICE RECEIVER CALCULATION

ROOM NAME	ROOM NO	OCCUPANTS	RECEIVERS REQ'D.
MULTI-PURPOSE	04	136 OCC.	6 RECEIVERS REQ'D.

NOTE:
136 OCC X 4% = 6 ASSISTICE LISTENING DEVICE RECEIVERS REQ.'D / PROVIDED OF THE 6 ALS DEVICE RECEIVERS PROVIDED, 25% OR RECEIVERS SHALL BE HEARING-AID COMPATIBLE IN ACCORDANCE WITH SECTION 11B-706.3 = 2 HEARING-AID COMPATIBLE RECIEVERS REQUIRED

LEGEND

WORKROOM
A101 | B
1,500 SF
10 OCC.
{15}

AREA IDENTITY/ CODE ANALYSIS
WORKROOM = ROOM NAME
A101 = ROOM NUMBER
B = OCCUPANCY CLASS (CBC 302)
1,500 SF = FLOOR AREA
10 = OCCUPANT LOAD
{15} = OCCUPANT LOAD PLUS ANCILLARY SPACE WHERE OCCURS

41

PATH OF EGRESS
41 = OCCUPANT LOAD
STARTING POINT OF PATH OF TRAVEL TO EXIT MARKED BY DOT AT THE BEGINNING OF EGRESS LINE

PH — PANIC HARDWARE DEVICE - REFERENCE DOOR SCHEDULE AND HARDWARE GROUP

NOT IN CONTRACT

(E) ILLUMINATED EXIT SIGN TO REMAIN (LOW LEVEL AS REQ'D)

SELF-ILLUMINATED EXIT SIGN (LOW LEVEL AS REQ'D)

EXITING FLOOR PLAN 1/8" = 1'-0" 10

DSA STAMP
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APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE No. 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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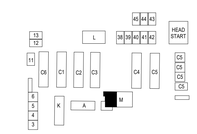
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

EXITING FLOOR PLAN

Date	Project Number
03/04/2022	21030
Application Number	Drawing Number
04-120689	A0.4
Drawn / Author	Checked / Checker

PRINT DATE: 3/8/2022 5:07:08 PM
FILE PATH: C:\Users\gillianc\Documents\21030-Buena-Park-USD-Whitaker-MPR-A19_gilliancAYESV.rvt

GENERAL NOTES:

1. WORK SHOWN HEREON SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," LATEST EDITION AND SUPPLEMENTS, THE 2019 CALIFORNIA BUILDING CODE (EXCAVATION AND GRADING), AND CITY OF BUENA PARK LOCAL ORDINANCES AS APPLICABLE.
2. EXISTING TOPOGRAPHY SHOWN HEREON WAS TAKEN FROM A SURVEY DATED SEPTEMBER 28, 2021 BY HAHN & ASSOCIATES, INC.
3. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
4. PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL HIRE A LICENSED LAND SURVEYOR TO VERIFY THAT THE ELEVATIONS SHOWN ON THE GRADING PLAN AT THE JOIN TO THE EXISTING IMPROVEMENTS MATCHES THE EXISTING ELEVATIONS IN THE FIELD. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES, AND SHALL NOT BEGIN CONSTRUCTION, IN THE AREAS OF DISCREPANCIES UNTIL THE CHANGED CONDITIONS HAVE BEEN EVALUATED.
5. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
6. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.
7. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
8. IF AT ANY TIME DURING GRADING OPERATIONS, ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, GRADING IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED.
9. THE PROPOSED GRADE IS THE FINAL GRADE AND NOT THE ROUGH GRADE. THE CONTRACTOR SHALL SUBTRACT THE THICKNESS OF THE PAVED SECTION AND/OR LANDSCAPE TOPSOIL SECTION TO ARRIVE AT THE ROUGH GRADE ELEVATION.
10. STRAIGHT GRADE SHALL BE MAINTAINED BETWEEN CONTOUR LINES AND SPOT ELEVATIONS UNLESS OTHERWISE SHOWN ON THE PLANS.
11. ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT APPROVED DISPOSAL SITES. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FOR THE TRANSPORTATION OF MATERIAL TO AND FROM THE SITE.
12. ALL FILL SOILS OR SOILS DISTURBED OR OVEREXCAVATED DURING CONSTRUCTION SHALL BE COMPACTED NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D-1557.
13. CONSTRUCTION STAKING FOR IMPROVEMENTS SHOWN ON THESE PLANS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR.
14. THE CONTRACTOR SHALL REPLACE ALL EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING, INCLUDING PERMANENT TRENCH RESURFACING.
15. CONTRACTOR TO CONTACT UNDERGROUND SERVICE ALERT (800-227-2600) PRIOR TO EXCAVATION.
16. ALL DIMENSIONS ARE IN FEET OR DECIMALS THEREOF.
17. ALL CURB DIMENSIONS AND RADII ARE TO PAVEMENT FACE OF CURB.
18. CONTRACTOR TO BE AWARE OF ALL OVERHEAD LINES AT ALL TIMES, SO AS NOT TO DISTURB THEM.
19. WATER SHALL BE PROVIDED ONSITE AND USED TO CONTROL DUST DURING CONSTRUCTION OPERATIONS.
20. CONTRACTOR SHALL OBTAIN ANY NECESSARY PERMITS FROM THE CITY OF HUNTINGTON BEACH FOR ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
21. BLANKET PROTECTION SHALL BE PROVIDED FOR ALL UTILITY PIPES AND CONDUITS UNDER DRIVEWAYS, ROADWAYS, PARKING LOTS, AND OTHER VEHICULAR PATH OF TRAVEL PER APWA STANDARD PLAN 225-1 WHERE THE MINIMUM COVER OVER THE PIPES AND CONDUITS IS LESS THAN 36".
22. CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES SUCH AS MANHOLE COVERS, CLEAN OUTLET COVERS, METER BOXES, PULL BOXES, VALVE BOXES, AREA DRAINS, CATCH BASINS, FIRE HYDRANTS AND OTHER SURFACE UTILITIES TO NEW FINISH GRADE. NOT ALL EXISTING SURFACE UTILITIES MAY HAVE BEEN IDENTIFIED ON THESE PLANS THAT MAY REQUIRE ADJUSTMENT TO NEW GRADE, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTEND OF WORK REQUIRED.

LEGEND:

GENERAL

LIMIT OF WORK

PROPERTY LINE

ANNOTATION

100.00XX — PROPOSED SURFACE ELEVATION/UTILITY ELEVATION

(100.00)XX — EXISTING SURFACE ELEVATION/UTILITY ELEVATION

XX — CONSTRUCTION NOTE

2.0% — FLOW (DIRECTION AND GRADE)

2:1 — SLOPE (DIRECTION AND RUN:RISE)

SITE

BACK OF CURB/FACE OF CURB

EROSION CONTROL

GRAVEL BAGS

FIBER ROLL

EXISTING DRAINAGE FLOW DIRECTION

GRADING

GB — GRADE BREAK LINE

R — RIDGE LINE

SAWCUT / JOIN LINE

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON THE CALIFORNIA STATE PLANE COORDINATE SYSTEM - NAD 83 (2011) ZONE 5, DERIVED FROM OBSERVATIONS TAKEN ON SEPTEMBER 8, 2021, USING SOPAC'S CALIFORNIA REAL TIME NETWORK. THE BEARING BETWEEN CORS "TORP" AND "SKYB", BEING N10°38'40"W, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCHMARK:

THE ELEVATION OF 72.907' ON BENCH MARK NO. 1A-147-05 (DESCRIBED BY OCS 2005 - FOUND 3¾" OCS ALUMINUM BENCHMARK DISK STAMPED "1A-147-05", SET IN THE SOUTHEASTERLY CORNER OF A 4.0 FT BY 15.0 FT CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE NORTHEASTERLY PORTION OF THE INTERSECTION OF ARTESIA BOULEVARD AND WESTERN AVENUE, 42 FT. NORTHERLY OF THE CENTERLINE OF ARTESIA AND 61 FT. EASTERLY OF THE CENTERLINE OF WESTERN. MONUMENT IS SET LEVEL WITH THE SIDEWALK.) NAVD 1988 DATUM, 1995 ADJUSTMENT, AS SHOWN IN COUNTY OF ORANGE VERTICAL CONTROL DATA SHEET WAS USED AS ELEVATION DATUM FOR THIS SURVEY.

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	(N)	NORTH
BW	BACK OF WALK	NTS	NOT TO SCALE
BLDG	BUILDING	PA	PLANTER AREA
BM	BENCH MARK	POC	POINT OF CONNECTION
BOS	BOTTOM OF STAIRS	PIV	POST INDICATOR VALVE
BMP	BEST MANAGEMENT PRACTICES	PCC	PORTLAND CEMENT CONCRETE
CB	CATCH BASIN	PRV	PRESSURE REDUCING VALVE
CI	CAST IRON	PVC	POLYVINYL CHLORIDE
CL, ℄	CENTER LINE	PL, ⅊	PROPERTY LINE
CMU	CONCRETE MASONRY UNIT	R=	RADIUS
CO	CLEANOUT	RCIP	RECTANGULAR CAST IRON PIPE
CONC	CONCRETE	RD	ROOF DRAIN
CF	CURB FACE	RW, R/W	RIGHT-OF-WAY
DW	DOMESTIC WATER	(S)	SOUTH
(E)	EAST	S=	SLOPE EQUALS
EG	EDGE OF GUTTER	SD	STORM DRAIN
EL., ELEV	ELEVATION	SSMH	SANITARY SEWER MANHOLE
ELEC	ELECTRIC, ELECTRICAL	SS	SANITARY SEWER
EX., EXIST.	EXISTING	STD	STANDARD
FDC	FIRE DEPARTMENT CONNECTION	SDMH	STORM DRAIN MANHOLE
FF	FINISHED FLOOR	TC	TOP OF CURB
FG	FINISHED GRADE (LANDSCAPE)	TEL	TELEPHONE
FS	FINISHED SURFACE (HARDSCAPE)	TG	TOP OF GRATE
FH	FIRE HYDRANT	TOS	TOP OF STAIRS
FL	FLOW LINE	TW	TOP OF WALL
FT	FOOT OR FEET	TS	TRAFFIC SIGNAL
FU	FIXTURE UNITS	TSB	TRAFFIC SIGNAL BOX
GV	GATE VALVE	TYP	TYPICAL
FW	FIRE WATER	TV	TELEVISION
GPM	GALLONS PER MINUTE	V.I.F.	VERIFY IN FIELD
HDPE	HIGH DENSITY POLYETHYLENE	VLT	VAULT
HP, (HP)	HIGH POINT	VCP	VITRIFIED CLAY PIPE
INV.	INVERT	(W)	WEST
LP, (LP)	LOW POINT	W	WATER
MAX.	MAXIMUM	WM	WATER METER
MIN.	MINIMUM	WV	WATER VALVE
MH	MANHOLE		

LEGEND:

ASPHALT CONCRETE PAVEMENT (SEE C5.00 FOR DETAILS)

COLD MILL & OVERLAY ASPHALT PAVEMENT

CONCRETE PAVEMENT (CONCRETE MIX 560-C-3250)

EXISTING BUILDING (SEE ARCHITECTURAL PLANS FOR MODERNIZATIONS)

PA — PLANTER AREA/LANDSCAPE

PROJECT DIRECTORY:

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CONTACT: JESUS PEREZ

SHEET INDEX:

CIVIL DRAWINGS	
C0.01	TITLE SHEET
C1.10	DEMOLITION & EROSION CONTROL PLAN
C1.30	GRADING PLAN
C1.40	PAVING PLAN
C5.00	CIVIL DETAILS

CALIFORNIA 811
CALL UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA FOR UNDERGROUND LOCATING 48 HOURS BEFORE YOU DIG!
www.digalert.org

IMPORTANT NOTICE
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIGALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIGALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 811 TWO WORKING DAYS BEFORE YOU DIG

Drawing: P:\2021\2100112 -19- Whitaker ES Mods\DWG\SHEET\2100112C-0.01-TS.dwg Last Plotted: Friday, March 4, 2022 1:05:46 PM By: Zack Wheeler

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APP: 04-120689 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ALI KHAMSI No. C74768 Exp. 12/31/23 CIVIL STATE OF CALIFORNIA

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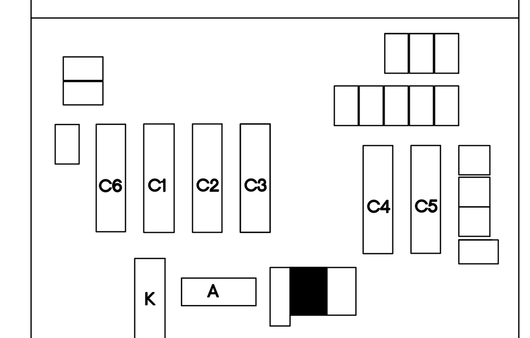
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA PLAN CHECK	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

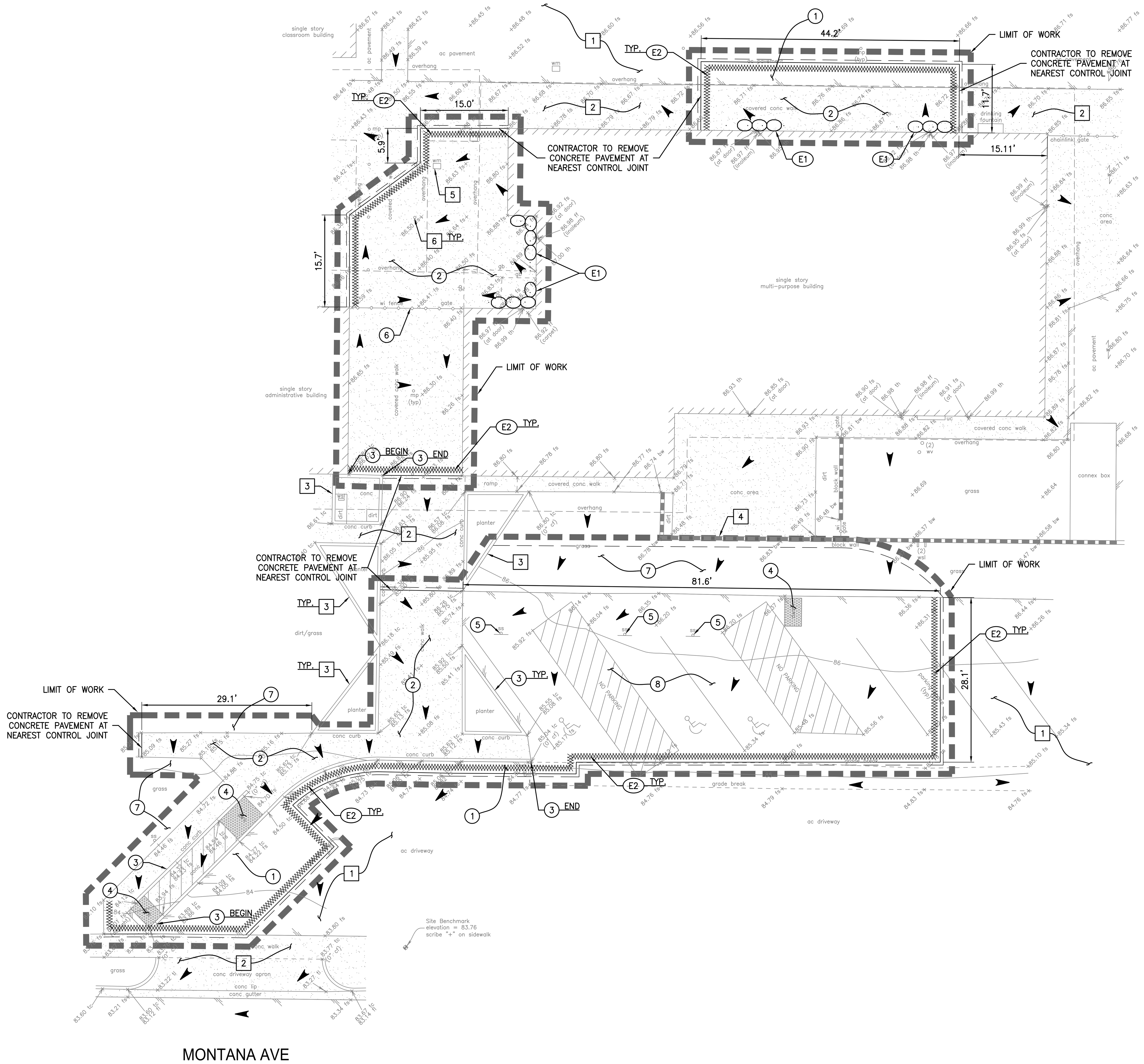
DSA BACKCHECK

JAMES A. WHITAKER ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

7351 HOLDER STREET
BUENA PARK, CA 90620

TITLE SHEET

Date	Project Number
03/04/2022	2100112
Scale	Drawing Number
AS NOTED	C0.01
Drawn ZW	Checked JP



LEGEND:

- LIMIT OF WORK
- GRAVEL BAGS
- FIBER ROLL
- SURFACE FLOW DIRECTION
- SAWCUT LINE

GENERAL DEMOLITION NOTES:

1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN TO BE PROTECTED, RELOCATED AND/OR SALVAGED.
2. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
4. NOT ALL EXISTING SITE CONDITIONS AND IMPROVEMENTS MAY HAVE BEEN SHOWN ON DEMOLITION PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE TO VISIT THE SITE TO FULLY ACKNOWLEDGE, UNDERSTAND AND INCLUDE THE EXTENT OF DEMOLITION WORK REQUIRED FOR THE IMPROVEMENTS SHOWN ON THE CONTRACT PLANS.
5. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
7. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
8. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
9. DEMOLITION IS LIMITED TO WITHIN DEMOLITION LIMIT LINE UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL INCLUDE IN THEIR SCOPE OF WORK DEMOLITION OF ALL EXISTING IMPROVEMENTS REQUIRED FOR THE CONSTRUCTION OF THE NEW IMPROVEMENTS SHOWN ON THE CONTRACT PLANS, REGARDLESS OF IF THE DEMOLITION AND REMOVAL OF THE EXISTING IMPROVEMENTS REQUIRED FOR NEW CONSTRUCTION IS EXPLICITLY SHOWN ON THESE PLANS TO BE DEMOLISHED AND REMOVED.
11. DEMOLITION CALLOUTS IN THIS SECTION ARE REPRESENTATIVE OF WHAT IS TO BE DONE, NOT AN ITEMIZED ACCOUNTING FOR EACH PIPE, CATCH BASIN, MANHOLE, VAULT, ETC, THAT IS TO BE DEMOLISHED, REMOVED AND DISPOSED OF.

DEMOLITION NOTES:

PROTECT-IN-PLACE

[1] ASPHALT PAVEMENT
[2] CONCRETE PAVEMENT
[3] CONCRETE CURB
[4] CMU WALL
[5] WATER METER BOX
[6] METAL POST

REMOVE & DEMOLISH

(1) ASPHALT PAVEMENT. COLD MILL TOP 2" OF AC SURFACE. OVERLAY PER GRADING PLAN C1.30 AND PAVING PLAN C1.40.
(2) CONCRETE PAVEMENT
(3) CONCRETE CURB
(4) TRUNCATED DOMES
(5) ADA SIGN POST AND FOOTING
(6) WROUGHT IRON FENCE AND GATE. SEE ARCHITECTURAL PLANS FOR FENCE IMPROVEMENT
(7) LANDSCAPE. CONTRACTOR TO REPLACE DEMOLISHED LANDSCAPE IN-KIND AT NEW GRADES. SEE SHEET C1.30 FOR IMPROVEMENTS
(8) FULL DEPTH AC PAVEMENT

EROSION CONTROL NOTES:

* FINAL BMP LOCATION TO BE DETERMINED BY THE CONTRACTOR.

(E1) PLACE GRAVEL BAGS TRIPLE ROW PER CASQA BMP FACT SHEET SE6.

(E2) PLACE FIBER ROLL PER CASQA BMP FACT SHEET SE5.

BMP NOTES:

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA 2009, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTORS):

EROSION CONTROL

EC1–SCHEDULING
EC2–PRESERVATION OF EXISTING VEGETATION
~~EC3–HYDRAULIC MULCH~~
~~EC4–HYDROSEEDING~~
~~EC5–SOIL BINDERS~~
~~EC6–STRAW MULCH~~
~~EC7–GEOTEXTILES~~
EC8–WOOD MULCHING
~~EC9–EARTH DIKES AND DRAINAGE SWALES~~
~~EC10–VELOCITY DISSIPATION DEVICES~~
~~EC11–SLOPE DRAINS~~
~~EC12–STREAMBANK STABILIZATION~~
~~EC13–POLYCRYLAMIDE~~

TEMPORARY SEDIMENT CONTROL

SE1–SILT FENCE
~~SE2–SEDIMENT BASIN~~
~~SE3–SEDIMENT TRAP~~
~~SE4–CHECK DAM~~
SE5–FIBER ROLLS
SE6–GRAVEL BAG BERM
SE7–STREET SWEEPING AND VACUUMING
SE8–SANDBAG BARRIER
~~SE9–STRAW BALE BARRIER~~
SE10–STORM DRAIN INLET PROTECTION
~~SE11–CHEMICAL TREATMENT~~

EQUIPMENT TRACKING CONTROL

TC1–STABILIZED CONSTRUCTION ENTRANCE/EXIT
~~TC2–STABILIZED CONSTRUCTION ROADWAY~~
~~TC3–ENTRANCE/OUTLET TIRE WASH~~

WIND EROSION CONTROL

WE1–WIND EROSION CONTROL

NON–STORMWATER MANAGEMENT

NS1–WATER CONSERVATION PRACTICES
~~NS2–DEWATERING OPERATIONS~~
NS3–PAVING AND GRINDING OPERATIONS
~~NS4–TEMPORARY STREAM CROSSING~~
~~NS5–CLEAR WATER DIVERSION~~
~~NS6–ILLICIT CONNECTION/DISCHARGE~~
NS7–POTABLE WATER/IRRIGATION
~~NS8–VEHICLE AND EQUIPMENT CLEANING~~
~~NS9–VEHICLE AND EQUIPMENT FUELING~~
~~NS10–VEHICLE AND EQUIPMENT MAINTENANCE~~
~~NS11–PILE DRIVING OPERATIONS~~
NS12–CONCRETE CURING
NS13–CONCRETE FINISHING
~~NS14–MATERIAL OVER WATER~~
~~NS15–DEMOLITION ADJACENT TO WATER~~
~~NS16–TEMPORARY BATCH PLANTS~~

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL

WM1–MATERIAL DELIVERY AND STORAGE
WM2–MATERIAL USE
WM3–STOCKPILE MANAGEMENT
WM4–SPILL PREVENTION AND CONTROL
WM5–SOLID WASTE MANAGEMENT
WM6–HAZARDOUS WASTE MANAGEMENT
~~WM7–CONTAMINATED SOIL MANAGEMENT~~
WM8–CONCRETE WASTE MANAGEMENT
WM9–SANITARY/SEPTIC WASTE MANAGEMENT
WM10–LIQUID WASTE MANAGEMENT

BMP NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL SILT AND MUD ON ADJACENT STREET(S), DUE TO CONSTRUCTION VEHICLES OR ANY OTHER CONSTRUCTION ACTIVITY, AT THE END OF EACH DAY, OR AFTER A STORM EVENT THAT CAUSES A BREECH IN INSTALLED CONSTRUCTION BMP'S WHICH MAY COMPROMISE STORM WATER QUALITY WITHIN ANY STREET(S).
2. ALL STOCKPILES OF SOIL AND/OR BUILDING MATERIALS THAT ARE INTENDED TO BE LEFT FOR A PERIOD GREATER THAN SEVEN CALENDAR DAYS ARE TO BE COVERED. ALL REMOVABLE BMP DEVICES SHALL BE IN PLACE AT THE END EACH WORKING DAY WHEN FIVE DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
3. A CONCRETE WASHOUT SHALL BE PROVIDED ON ALL PROJECTS WHICH PROPOSE THE CONSTRUCTION OF ANY CONCRETE IMPROVEMENTS WHICH ARE TO BE POURED IN PLACE ON SITE.
4. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER AFTER EACH RUN-OFF PRODUCING RAINFALL OR AFTER ANY MATERIAL BREACH IN EFFECTIVENESS.
5. ALL SLOPES THAT ARE CREATED OR DISTURBED BY CONSTRUCTION ACTIVITY MUST BE PROTECTED AGAINST EROSION AND SEDIMENT TRANSPORT AT ALL TIMES.
6. THE STORAGE OF ALL CONSTRUCTION MATERIALS AND EQUIPMENT MUST BE PROTECTED AGAINST ANY POTENTIAL RELEASE OF POLLUTANTS INTO THE ENVIRONMENT.

EROSION CONTROL NOTES:

1. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE GRADING PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES TO MEET "AS GRADED" CONDITIONS.
2. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR
3. WHEN THE INSPECTOR SO DIRECTS, A 12–INCH BERM SHALL BE MAINTAINED ALONG THE TOP OF THE SLOPE OF THOSE FILLS ON WHICH GRADING IS NOT IN PROGRESS.
4. STORM AND SEWER DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHALL BE PLUGGED WITH SANDBAGS.
5. EXCEPT WHEN THE INSPECTOR DIRECTS OTHERWISE, ALL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS FORECAST, AND SHALL BE MAINTAINED DURING THE RAINY SEASON (OCTOBER 15 TO APRIL 15).
6. SANDBAGS SHALL BE STOCKPILED ON SITE, READY TO BE PLACED IN POSITION WHEN RAIN IS FORECAST, OR WHEN THE INSPECTOR SO DIRECTS.
7. A "STANDBY EMERGENCY CREW" SHALL BE ALERTED BY THE PERMITTEE OR THE CONTRACTOR TO PERFORM EMERGENCY WORK DURING RAINSTORMS. THE PARTY TO BE CONTACTED IS:
   NAME: ________________________ (TO BE FILLED IN BY CONTRACTOR)
   PHONE NUMBER: ____________________

N

PLAN
SCALE: 1" = 10'–0"
0 5' 10' 20'
GRAPHIC SCALE

Drawing: P:\2021\2100112 -19- Whitaker ES Mods\DWG\SHEET\2100112C-1.10-EC-DX.dwg Last Plotted: Friday, March 4, 2022 1:06:09 PM By: Zack Wheeler

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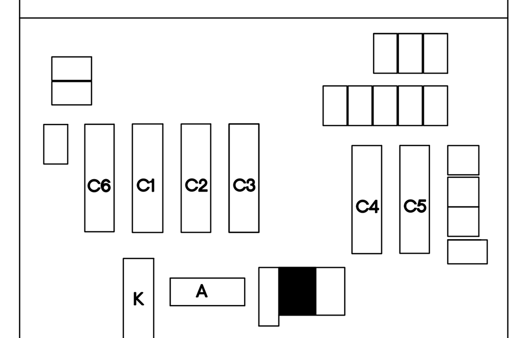
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

		DATE
○	DSA PLAN CHECK	12/15/2021
●	DSA BACKCHECK	03/04/2022
○	BIDDING	
○	CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

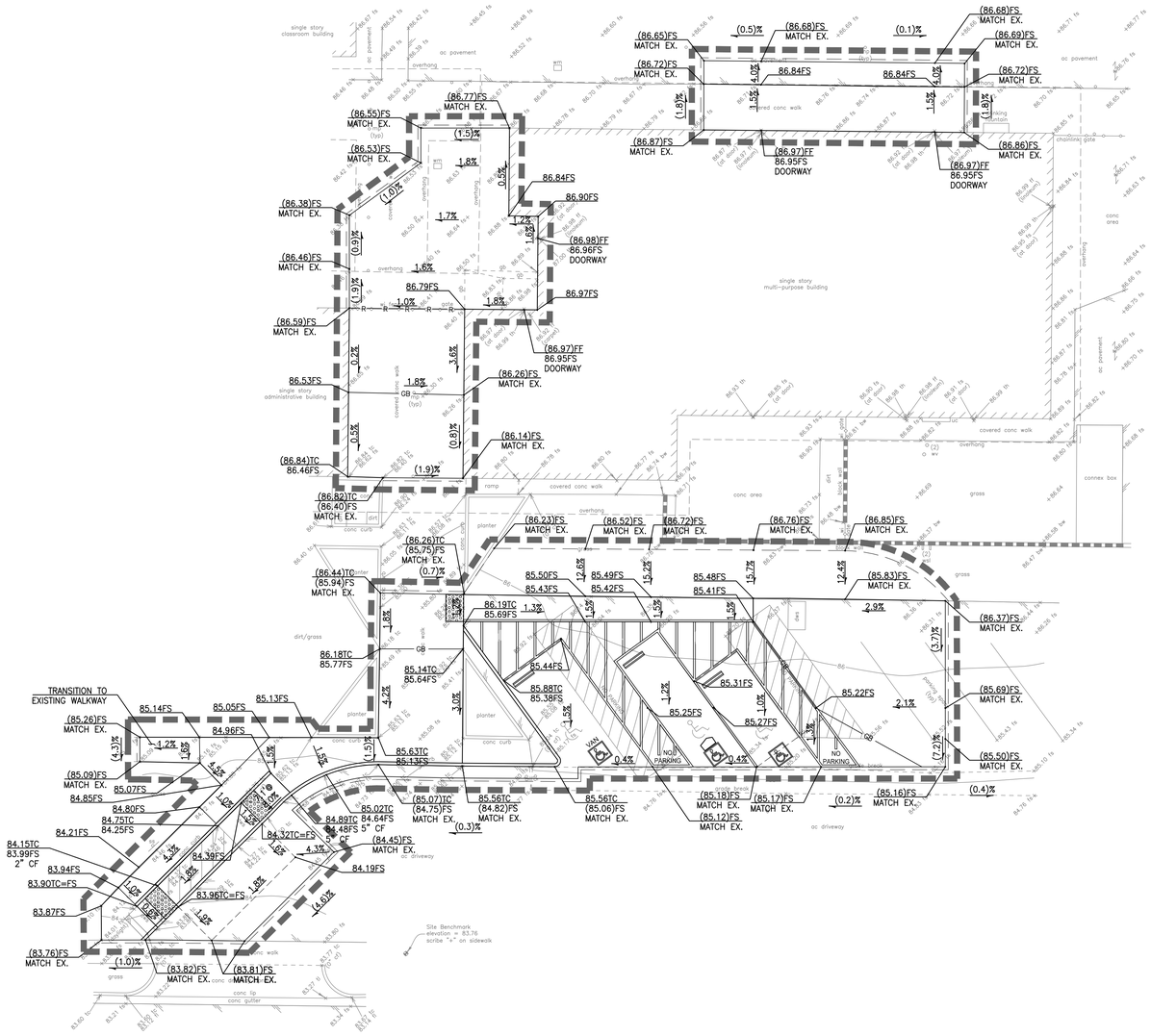
JAMES A. WHITAKER ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

DEMOLITION & EROSION CONTROL PLAN

Date	Project Number
03/04/2022	2100112
Scale	Drawing Number
AS NOTED	C1.10
Drawn ZW / Checked JP	

LEGEND:

	LIMIT OF WORK
GB	GRADE BREAK LINE
R	RIDGE LINE
	SAWCUT



PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMSI No. C74768 Exp. 12/31/23 STATE OF CALIFORNIA

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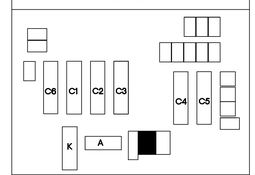

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6885 ORANGETHORPE AVE
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DSA BACKCHECK

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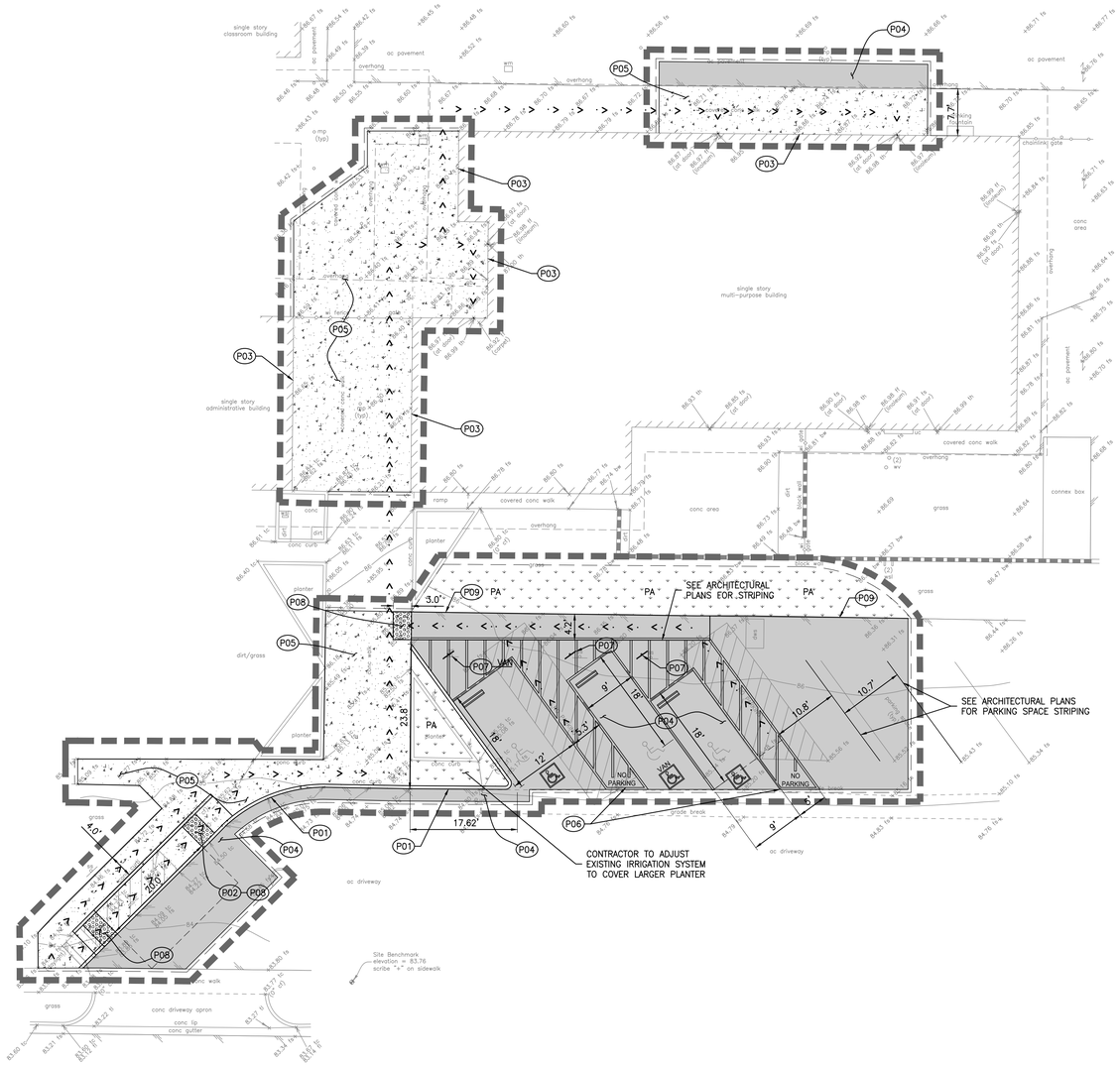
BUENA PARK, CA 90620

GRADING PLAN

Date	Project Number
03/04/2022	2100112
Scale	Drawing Number
AS NOTED	C1.30
Drawn ZW / Checked JP	

Drawing: P:\2021\100112 -Jrk- Whitaker ES Mods\DWG\DWG\2100112C-1.30-GD.dwg Last Plotted: Friday, March 4, 2022 4:20:56 PM By: Jesus Perez



LEGEND:

- LIMIT LINE OF PAVING
- ACCESSIBLE PATH OF TRAVEL
- CONCRETE PAVING (REFER TO SHEET C5.00 FOR DETAILS)
- FULL-DEPTH ASPHALT PAVEMENT (REFER TO SHEET C5.00 FOR DETAILS)
- PA — PLANTER AREA/LANDSCAPE
- PROPOSED BUILDING (REFER TO ARCHITECTURAL PLANS FOR DETAILS)
- 2" COLD MILL & OVERLAY ASPHALT PAVEMENT

PAVING CONSTRUCTION NOTES:

- P01 CONCRETE CURB PER DETAIL 1/C5.00.
- P02 CURB RAMP PER ARCHITECTURAL PLANS.
- P03 ISOLATION JOINT PER DETAIL 4/C5.00.
- P04 ASPHALT CONCRETE PAVEMENT PER DETAIL 5/C5.00.
- P05 CONCRETE PAVEMENT PER DETAIL 3/C5.00.
- P06 ACCESSIBLE PARKING STALL PER ARCHITECTURAL PLANS.
- P07 ACCESSIBLE PARKING SIGNAGE PER ARCHITECTURAL PLANS.
- P08 TRUNCATED DOMES PER ARCHITECTURAL PLANS.
- P09 WOOD HEADER PER DETAIL 6/C5.00.

PLAN
SCALE: 1" = 10'-0"
0 5' 10' 20'
GRAPHIC SCALE

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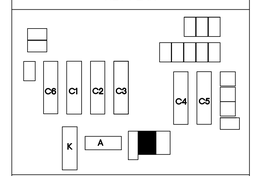

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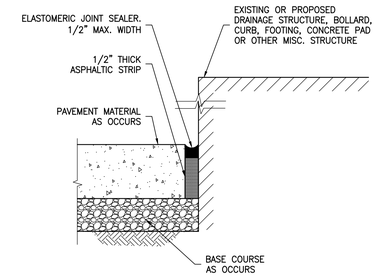
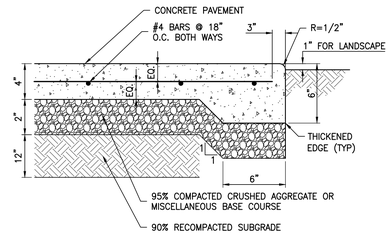
PAVING PLAN

Date	Project Number
03/04/2022	2100112
Scale	Drawing Number
AS NOTED	C1.40
Drawn: ZW / Checked: JP	



4 ISOLATION JOINT AT STRUCTURE

N.T.S.

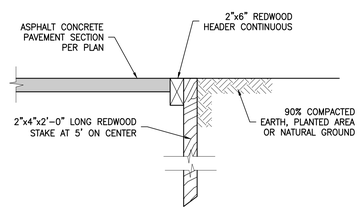


NOTES:

1. ALL TREAD SURFACES SHALL BE SLIP–RESISTANT.
2. REFER TO CIVIL SPECIFICATIONS FOR COLOR, PATTERN, TEXTURE, AND FINISH.
3. CONTRACTOR TO MATCH EXISTING SCORE PATTERN WHERE PROPOSED CONSTRUCTION JOINTS ARE NOT SHOWN PER PLAN. SEE DETAIL 2 HEREON.
4. CONCRETE MIX DESIGN SHALL CONFORM TO 560–C–3250 PER SSPWC 2018.

3 CONCRETE WALK SECTION

N.T.S.

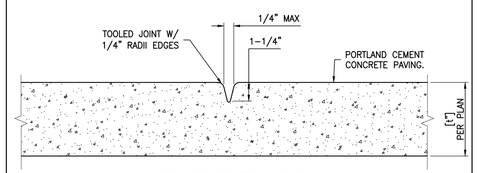


NOTE:

1. PRESSURE TREATED WOOD MAY BE SUBSTITUTED.

6 WOOD HEADER

N.T.S.



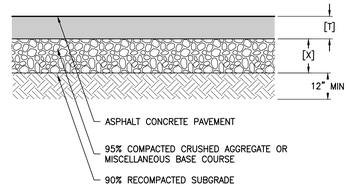
TOOLED CONTROL JOINT

NOTES:

1. CONTROL JOINTS SHALL BE CONSTRUCTED PER S.S.P.W.C.
2. CONSTRUCT CONTROL JOINTS WITHIN 24 HOURS OF POUR.

2 TOOLED CONTROL JOINT

N.T.S.

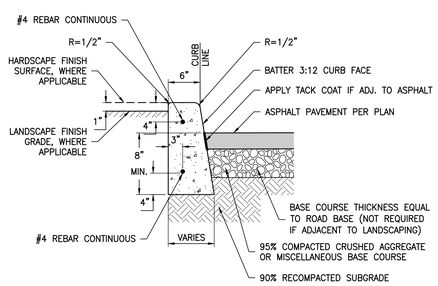


NOTE:

1. [T] = [MATCH EXISTING +1", OR 4"], WHICHEVER IS GREATER
2. [X] = [MATCH EXISTING]

5 ASPHALT PAVEMENT SECTION

N.T.S.



NOTES:

1. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.
2. CONTROL JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 10' INTERVALS O.C.
3. WHERE A WALK IS ADJACENT TO THE CURB, THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.
4. CONCRETE MIX DESIGN SHALL CONFORM TO 560–C–3250 PER SSPWC 2018.

1 CONCRETE CURB

N.T.S.

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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER A.J. KHAMSI No. C74768 Exp. 12/31/23 CIVIL STATE OF CALIFORNIA

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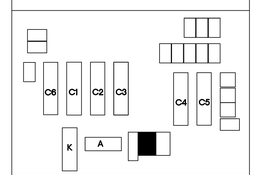
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

		DATE
○	DSA PLAN CHECK	12/15/2021
●	DSA BACKCHECK	03/04/2022
○	BIDDING	
○	CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

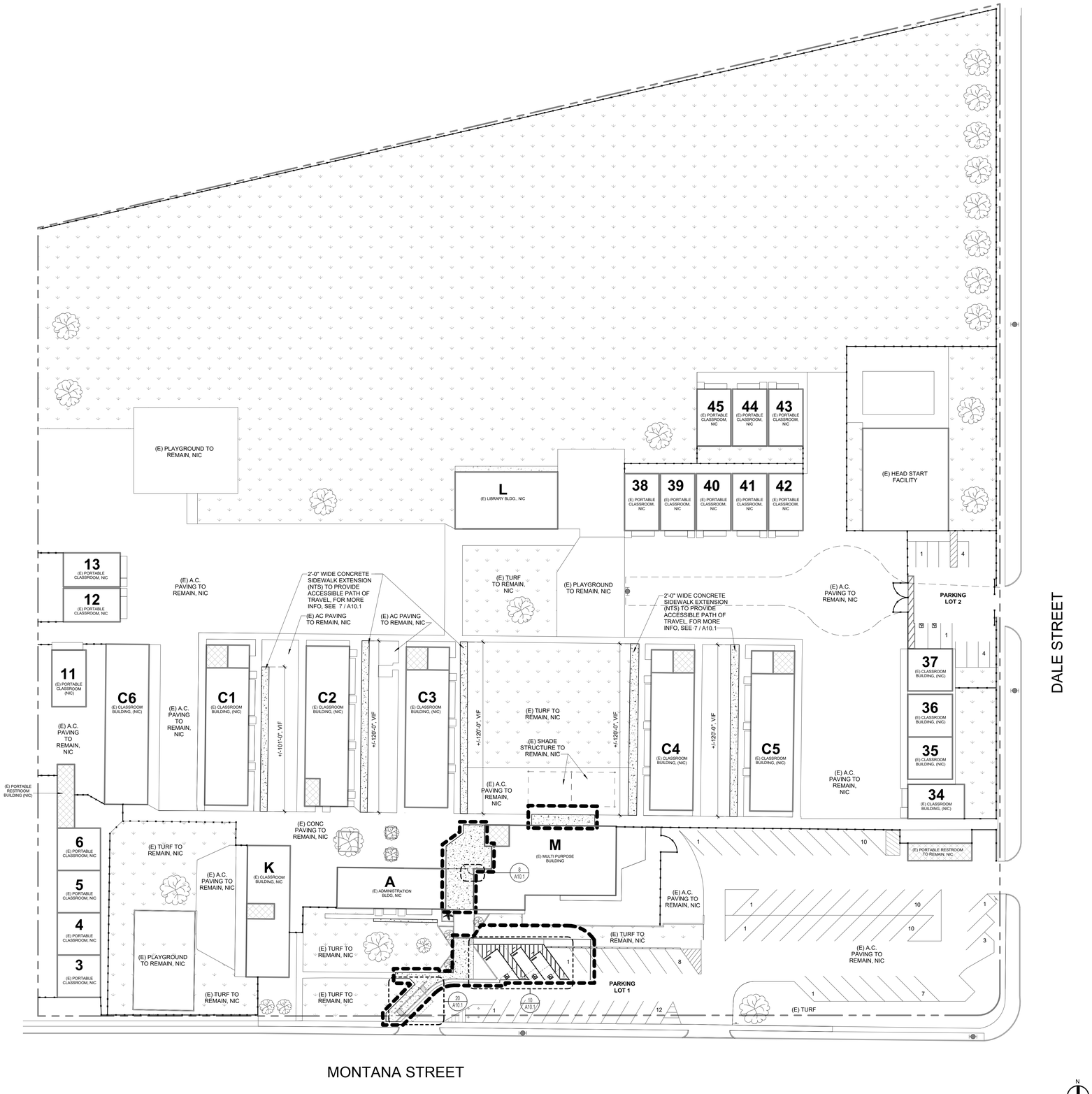
JAMES A. WHITAKER ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION

7351 HOLDER STREET
BUENA PARK, CA 90620

DETAILS

Date	Project Number
03/04/2022	2100112
Scale	Drawing Number
AS NOTED	C5.00
Drawn ZW / Checked JP	

Drawing: P:\2021\2100112 -Sp. Whitaker ES Wkshs\DWG\SHEETS\2100112-5.00-CP.dwg Last Plotted: Friday, March 4, 2022 1:07:55 PM By: Zack Wheeler



GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR 6'-0" HIGH TEMPORARY CONSTRUCTION BARRIER WITH VISION SCREEN AT STAGING, STORAGE AND CONSTRUCTION AREA WITH SIGNAGE EVERY 20'-0" TO WARN STUDENTS OF CONSTRUCTION AREA.
2. CONTRACTOR TO BRING IN OFFICE TRAILER TO CONSTRUCTION AREA.
3. CONTRACTOR SHALL ACCESS THE SITE FROM HOLDER ST. ANY DAMAGE TO FIRE LANE WILL BE AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR TO REPAIR BACK TO EXISTING CONDITIONS ALL LAYDOWN AREAS AT THE END OF CONSTRUCTION. THIS INCLUDES LANDSCAPE AREAS AND ANY BROKEN SPRINKLERS, VALVE BOXES, CONCRETE, ASPHALT, ETC.
5. CONTRACTOR SHALL REPLACE, RECONSTRUCT AND REPAIR ALL EXISTING WORK THAT IS IMPACTED, DAMAGED, OR DESTROYED AS A RESULT OF ANY CONTRACTOR WORK INCLUDING, BUT NOT LIMITED TO, HARDSCAPING, SIDEWALKS, IRRIGATION SYSTEMS, LANDSCAPING, LAWNS, STRUCTURES AND UTILITIES - ALL TO THE SATISFACTION OF THE DISTRICT.
6. WHERE ASPHALT OR CONCRETE IS BEING REPATCHED, CONTRACTOR SHALL PROVIDE EVEN AND STRAIGHT LINE CUTS WITH 2-FOOT STRAIGHT SLURRY SEAL SURFACE PATCH ON BOTH SIDES OF CUT.
7. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON SITE TO AVOID EXISTING DUCTS, PIPING OR CONDUITS, ETC., AND TO PREVENT HAZARDS TO PERSONNEL AND/OR DAMAGE TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN AND INSTALLED BY ANY OTHER CONTRACTS. THE ARCHITECT IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY ELEMENTS FOR CONSTRUCTION SAFETY.
8. GATES IN PATH OF TRAVEL SHALL COMPLY WITH EXIT DOOR REQUIREMENTS WITH PROPER LEVER HARDWARE AND KICK PLATES.

LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- LINE OF ROOF, SKYLIGHT, OR SOFFIT OVERHEAD - SHOWN DASHED
- (E) FIRE HYDRANT
- (E) BUILDING, NOT UNDER SCOPE OF WORK
- BUILDING UNDER SCOPE OF WORK
- CONCRETE SIDEWALK EXTENSION PER 7 / A10.1

NOTE:
SCOPE INDICATED IS CORRECTIVE WORK TO REQ'D PATH OF TRAVEL FOR DSA APP NO 04-114336

SITE PLAN - OVERALL 1" = 30'-0" 10

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APP: 04-120689 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE NO. C 30345 EXP. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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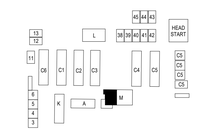
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

SITE PLAN - OVERALL

Date 03/04/2022	Project Number 21030
Application Number 04-120689	Drawing Number A1.1
Drawn Author	Checked Checker

PRINT DATE: 3/8/2022 5:07:09 PM
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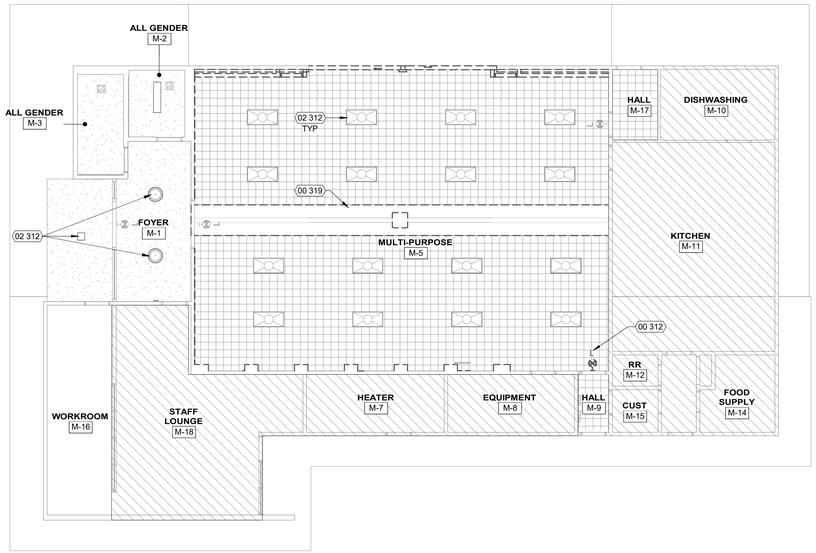
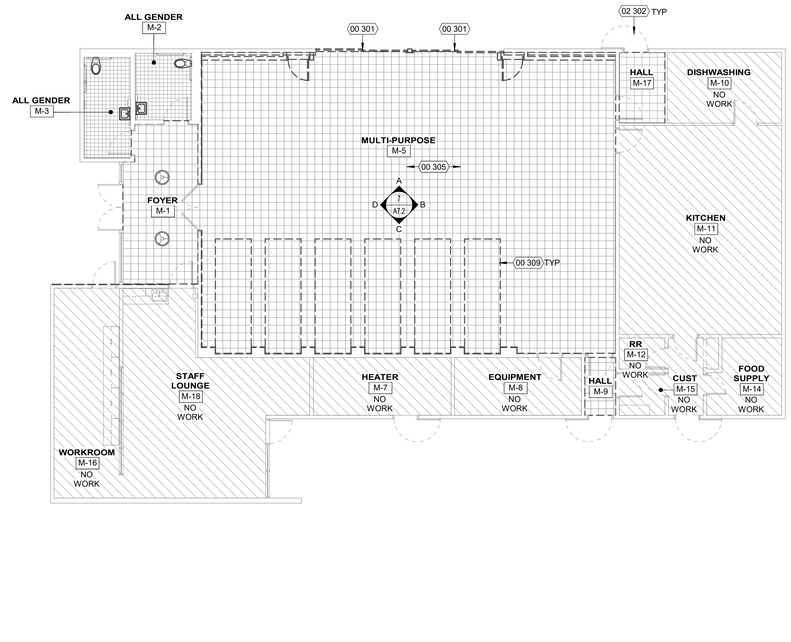
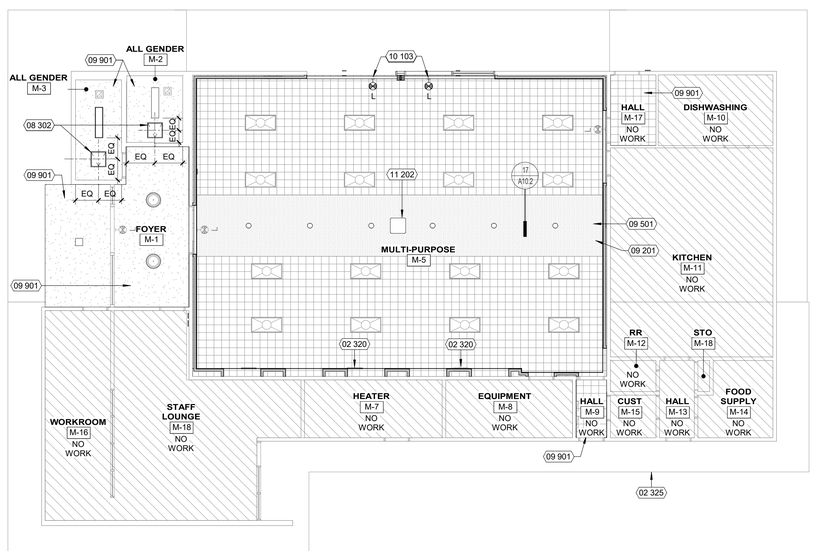


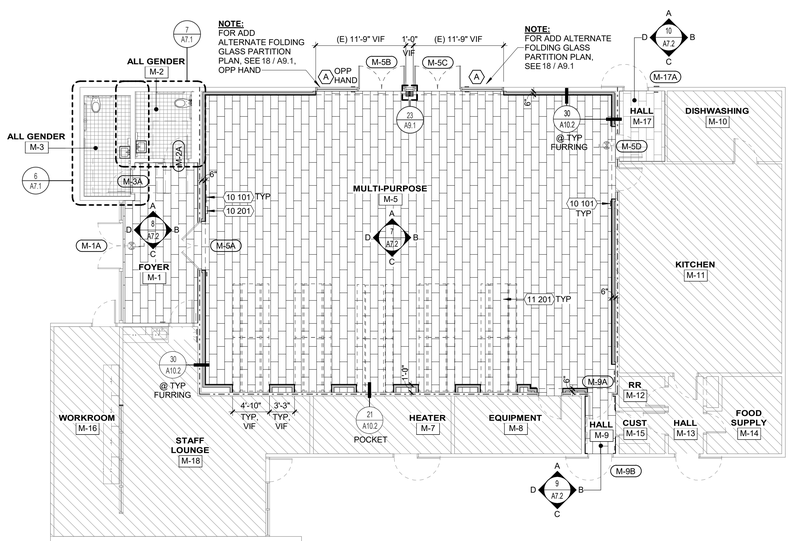
MULTI-PURPOSE ROOM DEMOLITION REFLECTED CEILING PLAN 1/8" = 1'-0" 18



MULTI-PURPOSE ROOM DEMOLITION FLOOR PLAN 1/8" = 1'-0" 8



MULTI-PURPOSE ROOM ALTERATION REFLECTED CEILING PLAN 1/8" = 1'-0" 20



MULTI-PURPOSE ROOM ALTERATION FLOOR PLAN 1/8" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
00 301	REMOVE (E) DOOR HARDWARE, PREP DOOR TO RECEIVE SCHEDULED DOOR HARDWARE
00 305	REMOVE (E) FLOORING, PATCH/REPAIR CONC SLAB AS REQ'D TO RECEIVE FINISH
00 309	REMOVE (E) IN-WALL CAFETERIA TABLE/POCKET ASSEMBLY, (E) WOOD FRAMING TO REMAIN
00 312	REMOVE (E) ILLUMINATED EXIT SIGN AND CONDUIT BACK TO THE NEAREST JUNCTION BOX
00 319	REMOVE (E) CEILING, PATCH/REPAIR AS REQ'D TO RECEIVE FINISH
02 302	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 312	(E) LIGHT FIXTURE TO REMAIN, CLEAN FIXTURE HOUSING/LENS, RELAMP TO MATCH EXISTING
02 320	(E) HVAC GRILLES, RELOCATE TO FACE OF FURRING, CLEAN AND PAINT P-1
02 325	(E) EAVE TO REMAIN, NO WORK
08 302	CEILING ACCESS PANEL PER 27/A10.2
09 201	PATCH/REPAIR GYP BD CEILING, PAINT P-1 PER FINISH LIST
09 501	GYP BD CEILING PER XX/XXXX
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.4
10 103	SELF-ILLUMINATED EXIT SIGN
10 201	SEMI RECESSED FIRE EXTINGUISHER CABINET PER 10/A10.2
11 201	IN-WALL CAFETERIA TABLE/POCKET IN (E) TO REMAIN WOOD POCKET FRAMING
11 202	INSTALL PROJECTOR WITH SUPPORT ROD

DEMOLITION LEGEND

BUILDING ELEMENT TO BE DEMOLISHED, REMOVED, AND/OR RELOCATED

NOTE: NO DEMOLITION SHALL BEGIN UNTIL PLANS HAVE BEEN APPROVED BY DSA

(E) TO REMAIN

RCP GENERAL NOTES

1. PAINT GYP. BD. CEILINGS AND SOFFITS P-1 UNO
2. PAINT EXPOSED CEILINGS, DUCTWORK AND EQUIPMENT PER FINISH LIST

GENERAL NOTES

1. FOR ALL REQUIRED SIGNAGE INCLUDING ROOM NAME/NUMBER, SEE SHEET A0.5
2. FOR TYPICAL DOOR CLEARANCES, SEE 1 / A10.1
3. DIMENSIONS OF WALLS ARE FROM FACE OF STUD UNLESS OTHERWISE NOTED.
4. PAINT ALL INTERIOR WALLS P-1 UNO, SEE FINISH LIST FOR MORE INFO.
5. SEE STRUCTURAL DRAWINGS FOR MORE INFO.

FINISH LIST

LUXURY VINYL TILE		
LVT-1	MOHAWK GROUP	LIVING LOCAL 12" X 24" "WEATHERING" - 960
LVT-2	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "SPORTY BLUE" - 620
LVT-3	MOHAWK GROUP	LIVING LOCAL 12" X 24" 721 "MASCALI" - 585
WALL BASE		
B-1	JOHNSONITE	4" COVED, COLOR: 23 "VAPOR GREY" CG
VINYL WALLCOVERING TACKBOARD W/ VINYL FABRIC-WRAPPED EDGES @ INTERIOR SEAMS AND VINYL PERIMETER TRIM		
VWC-1	ALL	KOROSEAL SPELLBOUND "DELTA" 8821-71

PAINT			
P-1	TYP WALLS, CEILINGS, SOFFITS, INT. DOORS/DOOR FRAMES	VISTA PAINT	"COOL ELEGANCE" 0517 (SEMI GLOSS DOORS/FRAMES & EGGSHELL FIELD)
P-2	ACCENT COLOR AS INDICATED	VISTA PAINT	"CARIBBEAN CURRENT" 0598 (SEMI GLOSS DOORS/ FRAMES & EGGSHELL FIELD)
P-3	TABLE POCKETS	RAL	K1 CLASSIC "DISTANT BLUE" 5023
PLASTIC LAMINATE			
PLAM-1	FOLDING LUNCH TABLES/BENCHES	WILSONART	"WHITE TIGRIS" 4783-60
FRP			
FRP-1	HALLWAY WALLS, TYP	MARLITE	SMOOTH S 100 S/2/S WHITE W/ WHITE PVC TRIM
WOOD WALL PLANKS			
WD-1	FOYER DECORATIVE WALL	STIKWOOD	RECLAIMED WEATHERED WOOD WHITE

RCP LEGEND

(E) 12"x12" ACOUSTIC CEILING TILES TO REMAIN, PAINT P-1

(E) GYP BD CEILING TO REMAIN, PROTECT IN PLACE; PAIN-T P1

(E) EXTERIOR PLASTER SOFFIT, PATCH/REPAIR AS REQ'D; PAINT TO MATCH (E) ADJ

(E) INTERIOR PLASTER CEILING, PATCH/ REPAIR AS REQ'D; PAINT TO MATCH (E) ADJ

(E) LIGHT FIXTURES TO REMAIN, CLEAN/RELAMP TO MATCH (E)

(E) MECHANICAL EQUIPMENT TO REMAIN, CLEAN/PAINT P-1

(E) CEILING ACCESS PANEL TO REMAIN

ROOM NAME A119 — ROOM TAG

(E) ILLUMINATED EXIT SIGN TO REMAIN

SELF-ILLUMINATED EXIT SIGN

ALTERATION FLOOR PLAN LEGEND

A101A — DOOR NUMBER, SEE DOOR SCHEDULE

A — WINDOW OR STOREFRONT, SEE WINDOW SCHEDULE

LINE OF ROOF, SKYLIGHT, OR SOFFIT OVERHEAD

(E) 1 HOUR OCCUPANCY SEPARATION

5/8" TYPE 'X' GYP BD ON WOOD STUD FURRING, RELOCATE (E) DEVICES TO NEW FINISH SURFACE; PAINT P-1 UNO; SEE 30 / A10.2

(E) WALL TO REMAIN, PROTECT IN PLACE

NOT IN CONTRACT

LVT PER FINISH LIST THIS SHEET

ACCESSIBLE DOOR CLEARANCES PER 1 / A10.1

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DATE: 03/15/2022

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE NO. C 30345 Exp. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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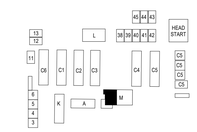
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

DEMOLITION/ ALTERATION FLOOR PLANS/RCPS

Date 03/04/2022	Project Number 21030
Application Number 04-120689	Drawing Number A2.1
Drawn / Author	Checked / Checker

PRINT DATE: 3/8/2022 5:07:15 PM
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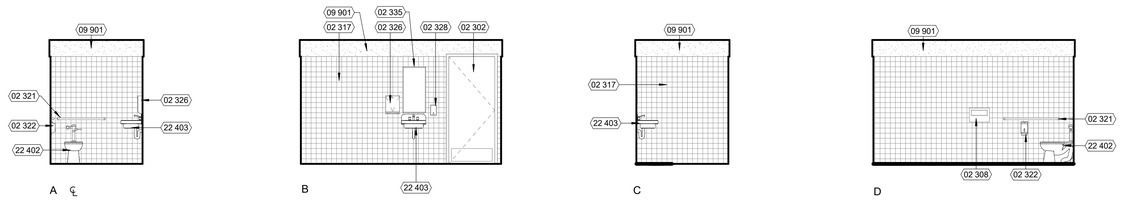
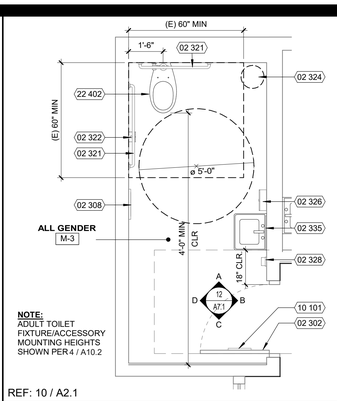


NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

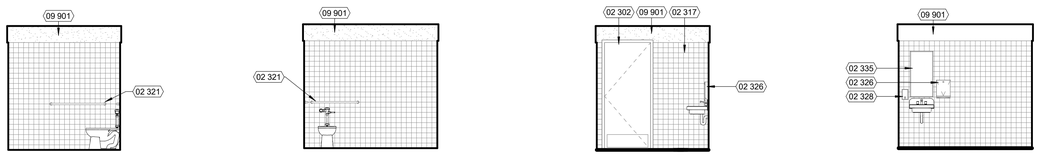
INTERIOR ELEVATIONS - ALL GENDER RESTROOM M-3 1/4" = 1'-0" 11



NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

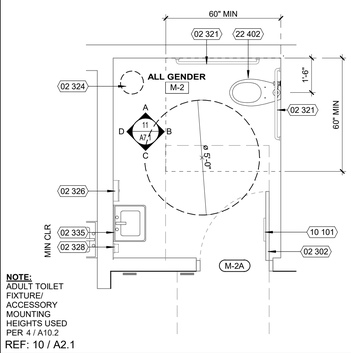
REF: 10 / A2.1

ENL'D ALTERATION FLOOR PLAN-ALL GENDER RR M-3 3/8" = 1'-0" 6



NOTE:
ADULT TOILET FIXTURE/ACCESSORY MOUNTING HEIGHTS SHOWN PER 4 / A10.2

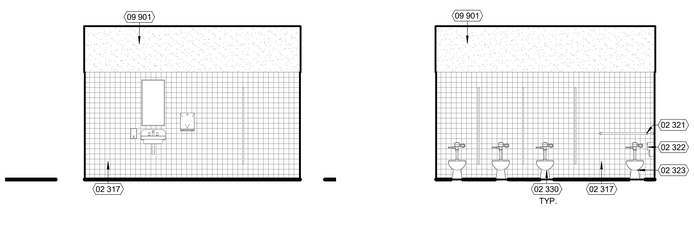
INTERIOR ELEVATIONS - ALL GENDER RESTROOM M-2 1/4" = 1'-0" 12



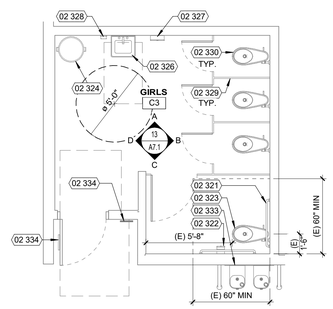
NOTE:
ADULT TOILET FIXTURE/ ACCESSORY MOUNTING HEIGHTS USED PER 4 / A10.2

REF: 10 / A2.1

ENL'D ALTERATION FLOOR PLAN-ALL GENDER RR M-2 3/8" = 1'-0" 7

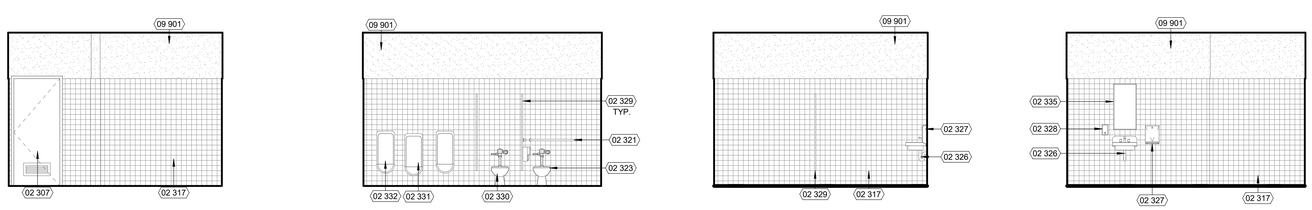


INTERIOR ELEVATIONS - GIRLS C3 1/4" = 1'-0" 13

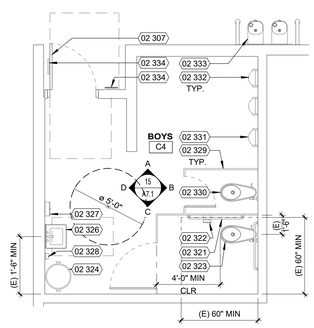


REF: 10 / A0.3

ENL'D FLOOR PLAN-GIRLS C3 1/4" = 1'-0" 8



INTERIOR ELEVATIONS - BOYS C4 1/4" = 1'-0" 15



REF: 10 / A0.3

ENL'D FLOOR PLAN-BOYS C4 1/4" = 1'-0" 9

KEYNOTES

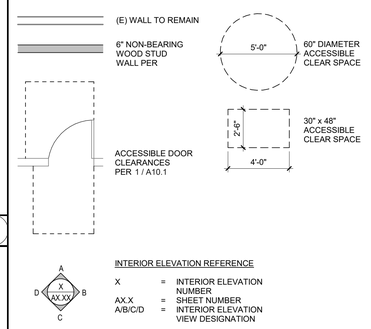
NUMBER	NOTE
02 302	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 307	(E) DOOR TO REMAIN, PROTECT IN PLACE
02 308	(E) TOILET SEAT COVER DISPENSER, SURFACE MOUNTED TO REMAIN
02 317	(E) CERAMIC TILE TO REMAIN, PATCH/REPAIR TO MATCH (E) AS REQ'D
02 321	(E) ACCESSIBLE GRAB BAR TO REMAIN
02 322	(E) SURFACE MOUNTED TOILET PAPER DISPENSER TO REMAIN
02 323	(E) FLOOR MOUNTED ACCESSIBLE WATER CLOSET TO REMAIN
02 324	(E) FREESTANDING TRASH RECEPTICLE TO REMAIN
02 326	(E) LAVATORY TO REMAIN
02 327	(E) SURFACE MOUNTED PAPER TOWEL DISPENSER TO REMAIN
02 328	(E) SURFACE MOUNTED SOAP DISPENSER TO REMAIN
02 329	(E) TOILET PARTITION TO REMAIN
02 330	(E) FLOOR MOUNTED WATER CLOSET TO REMAIN
02 331	(E) ACCESSIBLE URINAL TO REMAIN
02 332	(E) URINAL TO REMAIN
02 333	(E) DRINKING FOUNTAIN TO REMAIN
02 334	(E) SIGNAGE TO REMAIN
02 335	(E) MIRROR TO REMAIN
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.4
22 402	ACCESSIBLE FLOOR MOUNTED WATER CLOSET PER PLUMBING DRAWINGS
22 403	LAVATORY PER PLUMBING DRAWINGS

RESTROOM GENERAL NOTES

GENERAL
1. DIMENSIONS
   A. ALL MINIMUM CLEARANCE DIMENSIONS FOR PLUMBING FIXTURES ARE FROM FACE OF WALL FINISH TO CENTER OF FIXTURE, U.O.N.
   B. ALL DIMENSIONS MARKED "MIN. CLR" OR "CLR." ARE TO/ FROM FACE OF WALL FINISH (F.O.F.)
2. SEE FLOOR PLAN FOR INTERIOR FINISHES.

ACCESSORIES
1. FOR TYPICAL RESTROOM ACCESSORY MOUNTING HEIGHTS, ACCESSIBLE DIMENSIONS, SEE SHEET A10.10.2
2. TOILET ACCESSORIES LOCATED ON OR WITHIN WALLS SHALL BE INSTALLED AND SEALED TO PROTECT STRUCTURAL ELEMENTS FROM MOISTURE (CBC SECTION 1210.2.2)

LEGEND



INTERIOR ELEVATION REFERENCE

X	=	INTERIOR ELEVATION NUMBER
AX.X	=	SHEET NUMBER
A/B/C/D	=	INTERIOR ELEVATION VIEW DESIGNATION

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DATE: 03/15/2022

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE 30345 10/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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NO.	REMARKS	DATE

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	DATE
○ DSA SUBMITTAL	12/15/2021
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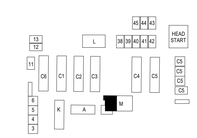
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

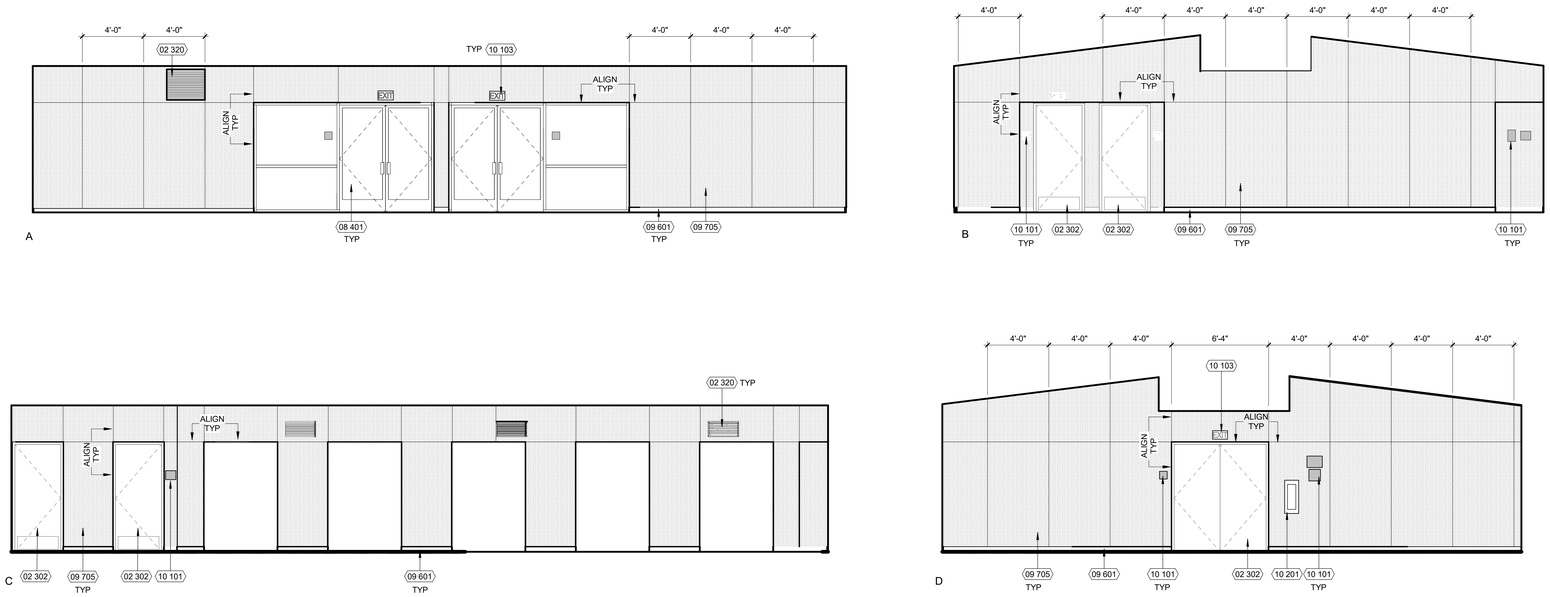
DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

ENLARGED ALTERATION FLOOR PLANS AND INTERIOR ELEVATIONS

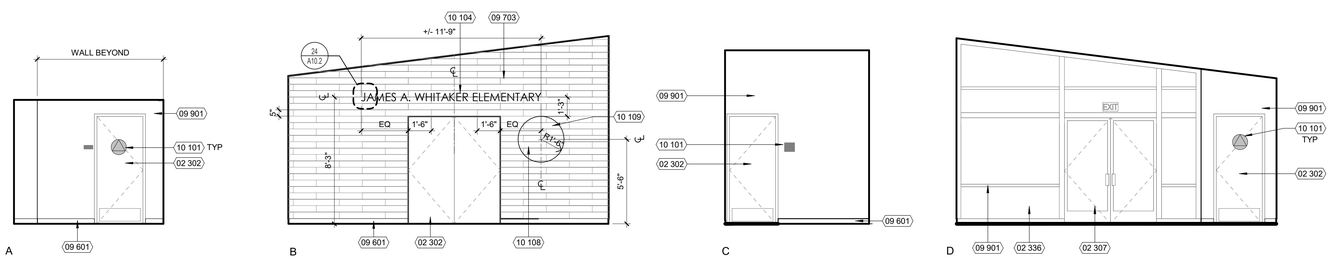
Date 03/04/2022	Project Number 21030
Application Number 04-120689	Drawing Number A7.1
Drawn Author	Checked Checker

PRINT DATE: 3/6/2022 5:18:21 PM
FILE PATH: C:\Users\gillianc\Documents\21030-Buena-Park-USD-Whitaker-MPR-A19_gilliancAVMSV.rvt

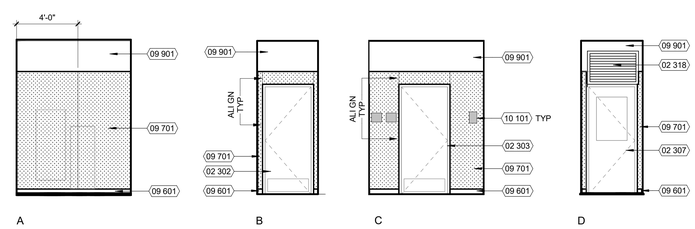


REF: 7 / A7.1

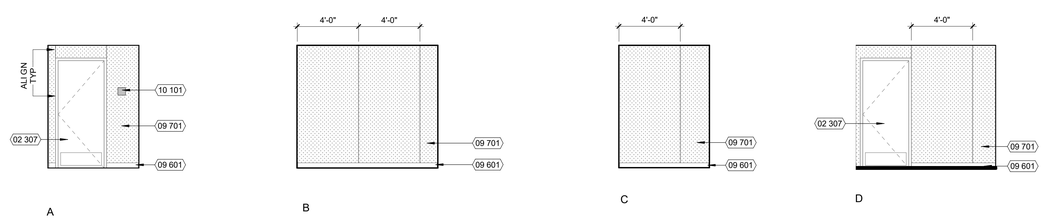
INTERIOR ELEVATIONS - MULTI-PURPOSE MP-4 1/4" = 1'-0" 7



INTERIOR ELEVATIONS - FOYER MP-1 1/4" = 1'-0" 8



IINTERIOR ELEVATIONS - HALL MP-13 1/4" = 1'-0" 9



INTERIOR ELEVATION-HALL MP-5 1/4" = 1'-0" 10

KEYNOTES

NUMBER	NOTE
02 302	(E) DOOR TO REMAIN, PAINT INTERIOR SURFACE P-1
02 303	(E) WINDOW TO REMAIN, PROTECT IN PLACE
02 307	(E) DOOR TO REMAIN, PROTECT IN PLACE
02 318	(E) LOUVER TO REMAIN, CLEAN, REPLACE SCREEN (E) AS REQ'D, PAINT P-1
02 320	(E) HVAC GRILLES, RELOCATE TO FACE OF FURRING, CLEAN AND PAINT P-1
02 336	(E) STOREFRONT SYSTEM TO REMAIN
08 401	STOREFRONT DOOR PER DOOR SCHEDULE
09 601	4" RUBBER WALL BASE PER FINISH LIST
09 701	8'-0" TALL FRP WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
09 703	STIKWOOD ADHERED WOOD PANELING PER FINISH LIST
09 705	VINYL WALL COVERING PER FINISH LIST, ALIGN SEAMS AS INDICATED IN INTERIOR ELEVATIONS
09 901	PAINT P-1 PER FINISH LIST
10 101	SIGNAGE PER SHEET A0.4
10 103	SELF-ILLUMINATED EXIT SIGN
10 104	6" TALL CAST ALUMINUM PIN MOUNTED LETTERS PER 24/A10.2
10 108	POWDER COATED LASER CUT WHITAKER LOGO W/ CONCEALED FASTENERS
10 109	CENTERLINE OF LOGO TO ALIGN WITH EDGE OF LETTERING
10 201	SEMI RECESSED FIRE EXTINGUISHER CABINET PER 10/A10.2

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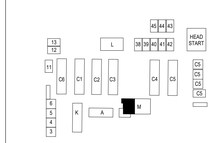

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WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
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INTERIOR ELEVATIONS

Date	Project Number
03/04/2022	21030
Application Number	Drawing Number
04-120689	A7.2
Drawn / Author	Checked / Checker

PRINT DATE: 3/6/2022 5:07:28 PM
FILE PATH: C:\Users\gillianc\Documents\21030-Buena-Park-USD-Whitaker-MPR-A19_gillianzAYBSV.rvt

DOOR SCHEDULE

MARK	DOOR SIZE PAIR	SIZE PANEL WIDTH	SIZE HT	SIZE THK	TYPE	MAT.	FINISH	CORE	GLASS	RATING	LOUVER HT	LOUVER WD	HDW GROUP	HDW PANIC	HDW CLOSER	FRAME TYPE	FRAME MTL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS THRESHOLD	COMMENTS
M-1A		3'-0"	6'-11"		A								(E)						(E)	(E)	(E)	
M-2A	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	-	YES	(E)	(E)	(E)	(E)	(E)	(E)	
M-3A	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-		-	-	(E)	-	YES	(E)	(E)	(E)	(E)	(E)	(E)	REMOVE (E) CLOSER DUE TO INSUFFICIENT PUSH-SIDE DOOR CLEARANCES
M-5A		3'-0"	7'-0"	1 3/4"	BB								(E)	YES					(E)	(E)	(E)	
M-5B		3'-0"	7'-0"		A	AL	CLR ANOD						1	YES		A	AL	CLR ANOD	17/A9.1	9/A9.1	10/A9.1	
M-5C		3'-0"	7'-0"		A	AL	CLR ANOD						1	YES		A	AL	CLR ANOD	17/A9.1	9/A9.1	10/A9.1	
M-5D	-	3'-0"	7'-0"	1 3/4"	B	(E)	(E)	(E)	-	-	-	-	(E)	YES		(E)	(E)	(E)	(E)	(E)	(E)	
M-9A		3'-0"	7'-0"	1 3/4"	B								(E)						(E)	(E)	(E)	
M-9B		3'-0"	7'-0"	1 3/4"	B									YES								
M-17A		3'-0"	7'-0"	1 3/4"	B								(E)	YES					(E)	(E)	(E)	

GENERAL NOTES

EXITING AND PATH OF TRAVEL

1. EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
2. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR BOTH INTERIOR AND EXTERIOR DOORS. REQUIRED FIRE DOORS: THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 POUNDS (66.7 N).
3. ALL REQUIRED EXIT DOORS SHALL BE OPERABLE FROM INSIDE WITHOUT THE USE OF ANY SPECIAL KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
4. ALL REQUIRED EXIT DOORS SHALL BE SIZED NOT LESS THAN 3'-0" WIDE AND 6'-8" HIGH AND BE CAPABLE OF OPENING 90 DEG. AND MOUNTED SO THAT THE CLEAR WIDTH OF THE EXIT WAY IS 32" MIN., U.O.N.
5. ALL REQUIRED EXIT DOORS SHALL SWING IN THE DIRECTION OF TRAVEL.
6. THE FLOOR OR LANDING LENGTH ON EACH SIDE OF AN EXIT DOOR SHALL BE LEVEL (<2% MAX. SLOPE) AND CLEAR AT LEAST 60 INCHES IN THE DIRECTION OF THE DOOR SWING (PULL SIDE) AND 48 INCHES ON THE PUSH SIDE, WHEN MEASURED AT RIGHT ANGLES FROM DOOR IN CLOSED POSITION. THE CLEAR WIDTH SHALL EXTEND 24 INCHES BEYOND THE STRIKE ON THE PULL SIDE OF ALL EXTERIOR EXIT DOORS AND 18 INCHES FOR INTERIOR EXIT DOORS. THE CLEAR WIDTH SHALL EXTEND 12 INCHES BEYOND THE STRIKE EDGE OF THE PUSH SIDE OF ALL EXIT DOORS. DOORS SHALL BE EQUIPPED WITH BOTH A LATCH AND CLOSER. SEE DETAIL 1 / A10.1
7. LATCHING AND LOCKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN THE PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVEL-TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATED BARS OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE.

HARDWARE

1. HAND ACTIVATED HARDWARE SHALL BE BETWEEN 34" AND 44" A.F.F. COORDINATE MOUNTING HEIGHT. DO NOT TO OBSTRUCT DOOR VISION LIGHT WHERE OCCURS.
2. PANIC HARDWARE SHALL BE PROVIDED ON EXIT DOORS SERVING AN OCCUPANT LOAD OF 50 OR MORE. PROVIDE WALL OR FLOOR MOUNTED DOOR STOPS FOR ALL DOORS. LOCATE FLOOR MOUNTED DOOR STOP WITHIN 4" MAX. OF WALL. PROVIDE BACKING AT ALL WALL MOUNTED DOOR STOPS.
3. PROVIDE NON-REMOVABLE PINS ON ALL HINGES ACCESSIBLE FROM THE EXTERIOR.
4. PROVIDE CYLINDER GUARDS ON ALL MORTISED OR RIM TYPE CYLINDER LOCKS WHICH PROJECT BEYOND THE FACE OF THE DOOR.
5. DOOR CLOSERS SHALL CONFORM WITH 2019 CBC 11B-404.2.8.1
6. DOORS TO INCLUDE FACTORY INSTALLED MAGNETIC CONTACTS, 3/8" RECESSED PRESS FIT, COLOR TO MATCH WINDOW FRAME, AT ALL CLASSROOM DOORS, SEE MECHANICAL

WINDOW GENERAL NOTES

1. FOR DOOR/WINDOW REFERENCE TAGS, SEE 10 / A2.1
2. ALL OVERALL DIMENSIONS CORRESPOND TO WINDOW ROUGH OPENINGS UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL BE SOLEY RESPONSIBLE TO COORDINATE ROUGH OPENING SIZE WITH REQUIRED SHIM SPACERS AND FINISH FRAME DIMENSION.
4. ALL ROUGH OPENING DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO WINDOW FABRICATION.
5. ALL WINDOWS SHALL BE RATED STC 35 MINIMUM.
6. SAFETY GLAZING IS REQUIRED WHEN BOTTOM OF EXPOSED EDGE OF GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE, PER "T" NOTED ON DOOR/WINDOW TYPES, THIS SHEET.
7. SAFETY GLAZING SHALL COMPLY WITH CBC SECTION 2406.
8. ANY WINDOW SECTION WHOSE NEAREST VERTICAL EDGE IS WITHIN 24" FROM A DOOR IN CLOSED POSITION AND WHOSE BOTTOM EDGE IS LESS THAN 60" ABOVE THE WALKING SURFACE SHALL BE TEMPERED AS INDICATED IN WINDOW TYPES, THIS SHEET. ALSO, ANY WINDOW SECTION WHERE THE LOWEST EDGE OF THE GLAZING MATERIAL IS LESS THAN 18" ABOVE THE FLOOR AND WHOSE TOP EDGE IS GRATER THAN 36" ABOVE THE FLOOR AND WHERE THE SECTION IS GREATER THAN 9 SF AND IS WITHIN 36" HORIZONTALLY OF A WALKING SURFACE SHALL BE TEMPERED.

DOOR/WINDOW ABBREVIATIONS

CORE:
GL GLASS

DOOR PANEL FINISH:
FF FACTORY FINISH

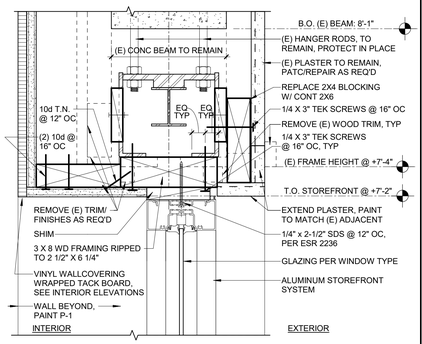
DOOR FRAME FINISH:
FF FACTORY FINISH
PTD PAINTED - SEE FINISH LIST

DOOR PANEL / FRAME MATERIAL:
AL ALUMINUM
HM HOLLOW METAL
PC POWDER COATED
STL STEEL

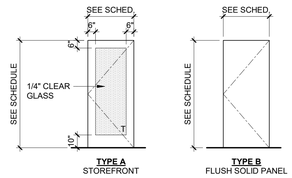
HARDWARE:
PH PANIC - SEE EXITING FLOOR PLAN

GLAZING TYPE PER SPEC 08 80 00:
SP (1) 1/4" THICK SINGLE GLAZING PANE
T TEMPERED, CATEGORY II (PER CBC 2019 SECTION 2406)

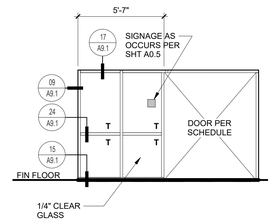
FRAME FINISH:
P PAINTED
PC POWDER COATED
FF FACTORY FINISH

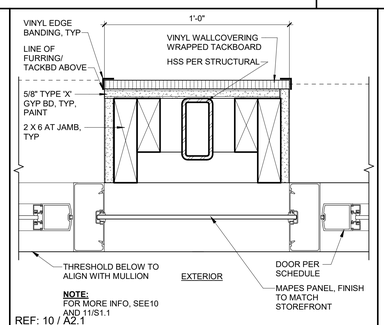


STOREFRONT HEAD @ PLASTER 3" = 1'-0" 17

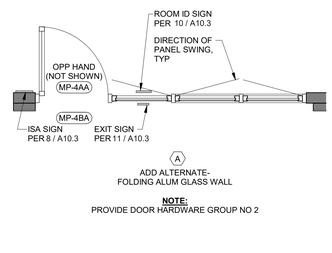


DOOR TYPES

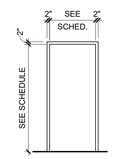


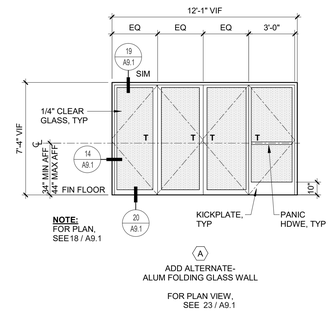


STOREFRONT CENTER JAMB 3" = 1'-0" 23



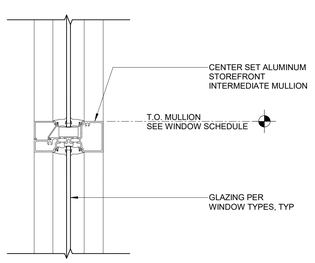
ADD ALTERNATE-FOLDING ALUM GLASS WALL FLOOR PLAN 3/8" = 1'-0" 18



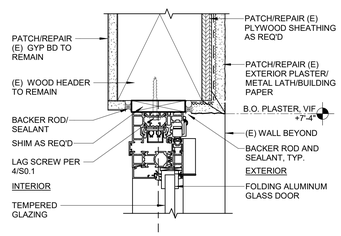


FRAME TYPES

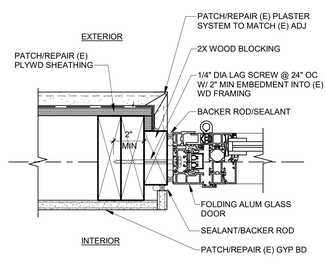
WINDOW TYPES



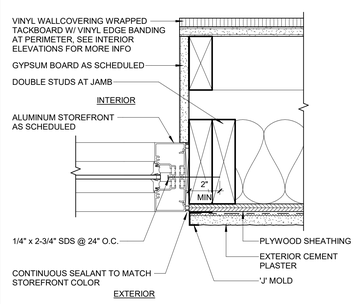
HORIZ. STOREFRONT MULLION 3" = 1'-0" 24



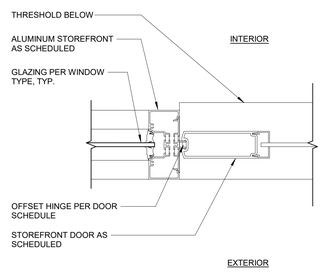
FOLDING ALUM GLASS WALL HEAD 3" = 1'-0" 19



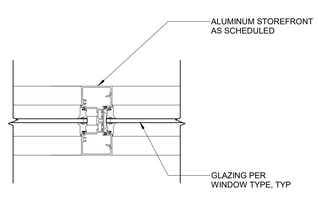
FOLDING ALUM GLASS WALL JAMB 3" = 1'-0" 14



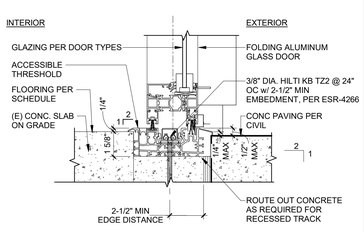
STOREFRONT JAMB 3" = 1'-0" 09



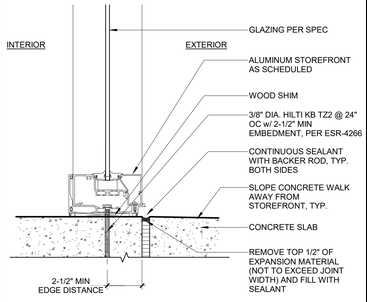
ALUMINUM DOOR JAMB AT SF 3" = 1'-0" 04



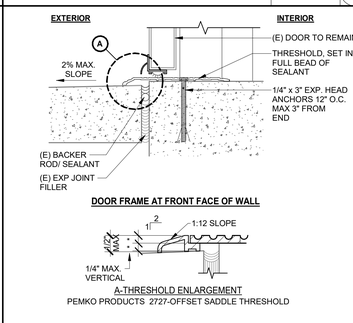
VERTICAL STOREFRONT MULLION 3" = 1'-0" 25



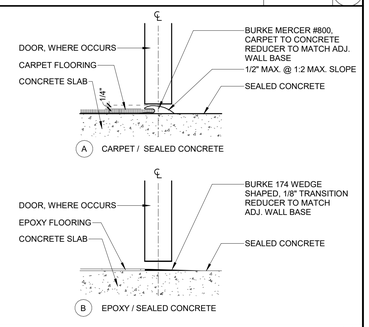
FOLDING ALUM GLASS WALL SILL 3" = 1'-0" 20



STOREFRONT SILL 3" = 1'-0" 15



EXTERIOR DOOR THRESHOLD 3" = 1'-0" 10



INTERIOR FLOOR TRANSITIONS 3" = 1'-0" 05

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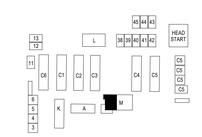
CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

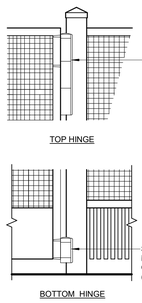
DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

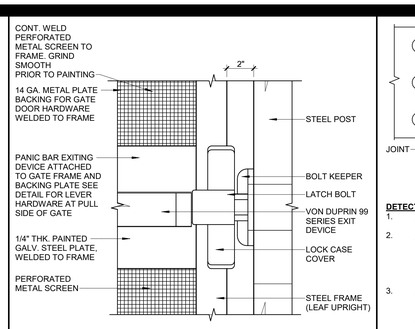
DOOR SCHEDULE AND DETAILS, WINDOW TYPES AND DETAILS

Date 03/04/2022	Project Number 21030
Application Number 04-120689	Drawing Number A9.1
Drawn / Checked	
Author / Checker	

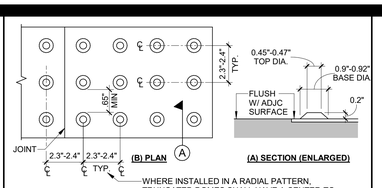
PRINT DATE: 3/6/2022 5:07:34 PM
FILE PATH: C:\Users\gillianc\Documents\21030-Buena-Park-USD-Whitaker-MPR-A19_gilliancAYK5Y.rvt



HEAVY DUTY HINGES 1" = 1'-0" (21)



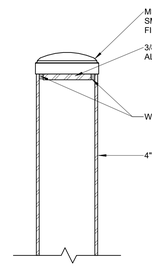
GATE PANIC HARDWARE 3/4" = 1'-0" (16)



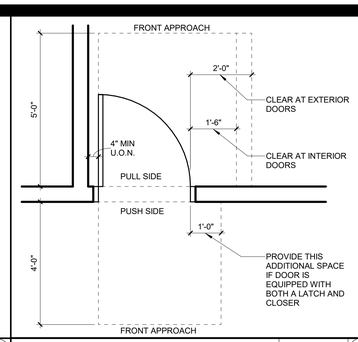
DETECTABLE WARNINGS:

1. **HAZARDOUS VEHICULAR AREAS** DETECTABLE WARNINGS AT HAZARDOUS VEHICULAR AREAS SHALL BE 36 INCHES IN WIDTH.
2. **ONLY APPROVED DSA-AC DETECTABLE WARNING PRODUCTS** AND DIRECTIONAL SURFACES SHALL BE INSTALLED PER THE CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 1, CH 5, ARTICLES 2,3, & 4 . REFER TO CCR TITLE 24, PART 12, SEC 12 - 11B.705 FOR BLDG/FACILITY ACCESS SPEC'S FOR PRODUCT APPROVAL FOR DETECTABLE WARNING PRODUCTS/DIRECTIONAL SURFACES.
3. **COLOR AND CONTRAST** THE MAT'L USED TO PROVIDE VISUAL CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. WARNING SURFACES SHALL BE YELLOW AND APPROX. FS 33538 OF FEDERAL STD 595C OR SHALL PROVIDE A 70% MIN VISUAL CONTRAST W/ ADJ. WALKING SURFACES. (HAZARDOUS VEHICULAR AREAS SHALL ONLY ALLOW YELLOW, LISTED ABOVE)

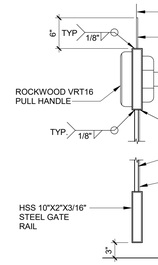
TRUNCATED DOMES 1/4" = 1'-0" (11)



FENCE POST CAP 3" = 1'-0" (6)

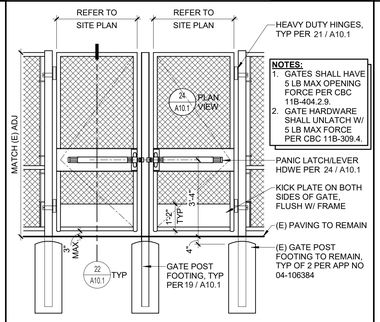


TYPICAL DOOR CLEARANCES 1/2" = 1'-0" (1)



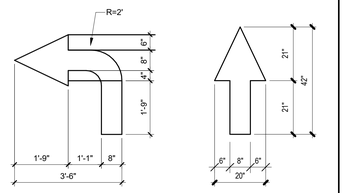
REF: 17 / A10.1

GATE PANIC HARDWARE SECTION 1" = 1'-0" (22)



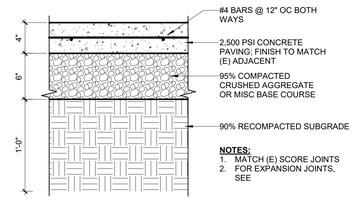
NOTES:
1. GATES SHALL HAVE 5 LB MAX OPENING FORCE PER CBC 11B-404.2.9.
2. GATE HARDWARE SHALL UNLATCH W/ 5 LB MAX FORCE PER CBC 11B-309.4.

CHAINLINK GATE ELEVATION 3/8" = 1'-0" (17)



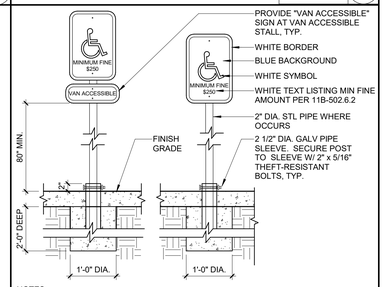
NOTES:
1. ALL FLOW ARROWS TO BE 2 COATS WHITE BEADED REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.
2. REVERSE ARROWS FOR OPPOSITEI DIRECTION OF FLOW

DIRECTIONAL ARROWS 1/2" = 1'-0" (12)



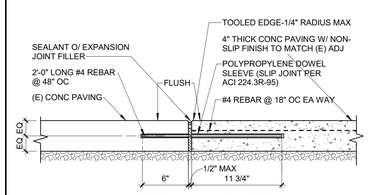
NOTES:
1. MATCH (E) SCORE JOINTS
2. FOR EXPANSION JOINTS, SEE

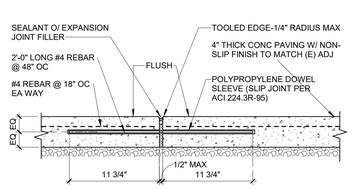
CONCRETE SIDEWALK EXTENSION 1 1/2" = 1'-0" (7)



NOTES:
1. ACCESSIBLE SIGN TO BE LOCATED ON FACE OF COLUMN U.O.N.
2. ALL TEXT TO BE 2" IN HEIGHT WHEN MOUNTED ABOVE 70", PER 11B-703.5.5
3. MINIMUM SIGN SIZE TO BE 70 SQ INCHES, MIN.

ACCESSIBLE STALL SIGNAGE 3/4" = 1'-0" (2)

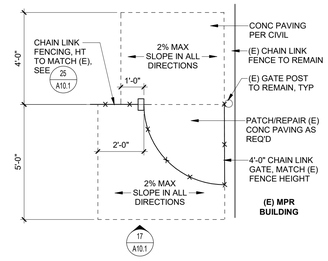




NOTES:

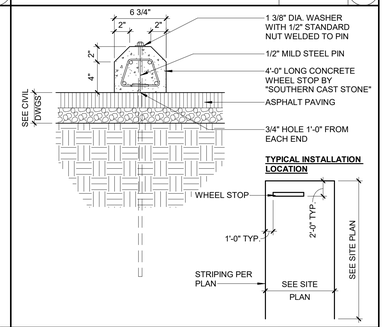
1. VERTICAL CHANGE IN ELEVATION ALONG ACCESSIBLE PATH OF TRAVEL CANNOT EXCEED 1/4" PER CBC 11B-303.2
2. LEVEL CHANGE BETWEEN 1/4" - 1/2" MUST BE BEVELED @ 1:2 MAX PER CBC 11B-303.3.
3. PROVIDE EXPANSION JOINTS @ 16'-0" EA WAY MAX UNO SEE SITE PLAN FOR LOCATIONS.

CONCRETE PAVING EXPANSION JOINTS 1 1/2" = 1'-0" (13)

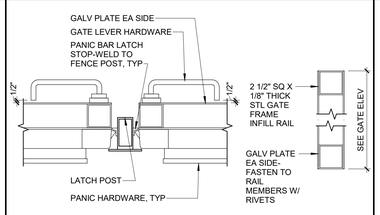


REF: 10 / A0.3

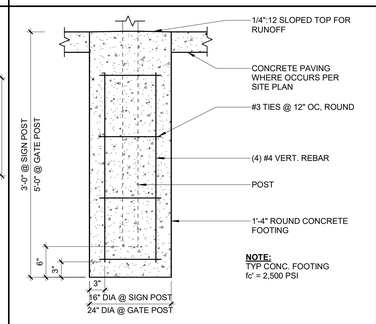
ENLARGED GATE PLAN 3/8" = 1'-0" (8)



WHEEL STOP 1 1/2" = 1'-0" (3)

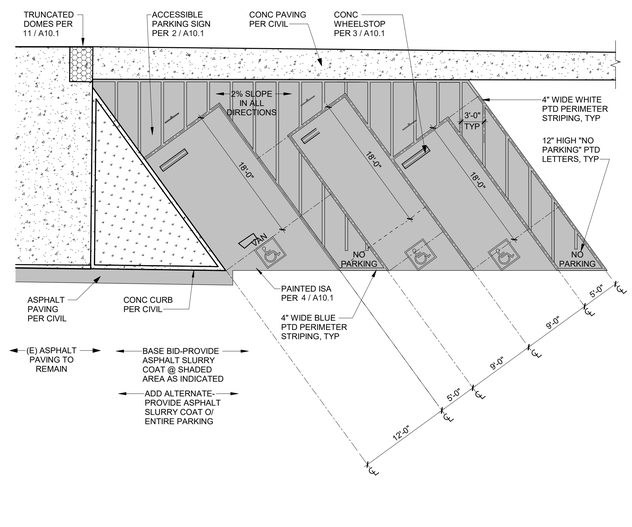


CHAIN LINK GATE HARDWARE 1" = 1'-0" (24)

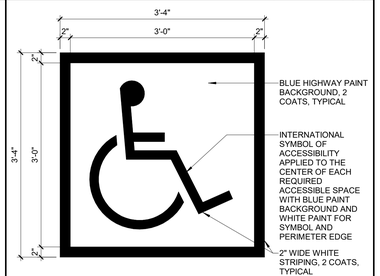


NOTE:
TYP CONC. FOOTING
fc' = 2,500 PSI

GATE POST FOOTING 1" = 1'-0" (19)

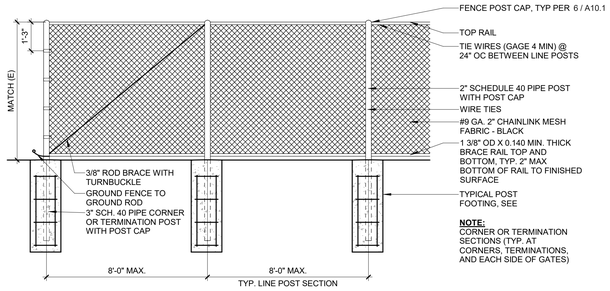


ENLARGED SITE PLAN-ACCESSIBLE PARKING 1/8" = 1'-0" (10)



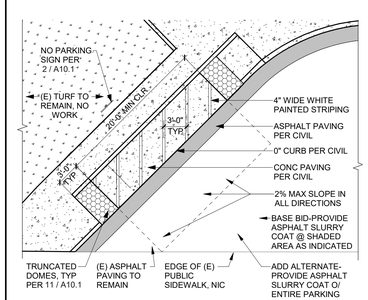
ISA SYMBOL SHALL COMPLY WITH 11B-502.6 AND 11B-703.7.2.1

ACCESSIBLE PARKING STALL ISA 1" = 1'-0" (4)

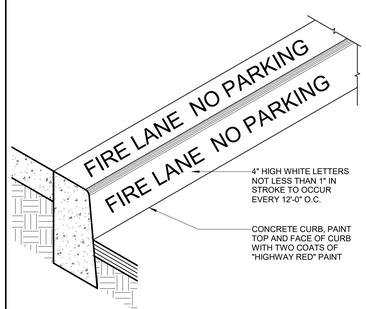


NOTE:
CORNER OR TERMINATION SECTIONS (TYP. AT CORNERS, TERMINATIONS, AND EACH SIDE OF GATES)

CHAIN LINK FENCING 3/8" = 1'-0" (25)



ACCESSIBLE DROP OFF 1/8" = 1'-0" (20)



FIRE LANE MARKING 1 1/2" = 1'-0" (5)

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

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Irvine, California 92618
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www.StudioW-Architects.com

ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE No. C 30345 03/04/22 STATE OF CALIFORNIA	

DATE SIGNED: 03/04/2022

GENERAL NOTES

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2. This sheet is not to be used for construction unless the architect's stamp and signature appear on the drawings and the status box indicated drawings have been released for construction.
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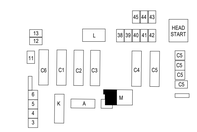
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
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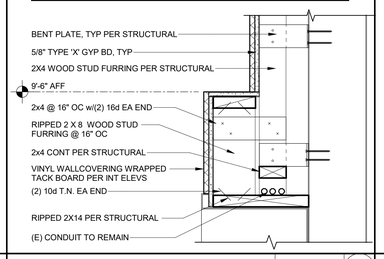
EXTERIOR DETAILS

Date	Project Number
03/04/2022	21030
Application Number	Drawing Number
04-120689	A10.1
Drawn / Checked	
Author / Checker	

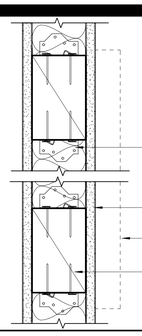
PRINT DATE: 3/6/2022 5:07:38 PM
FILE PATH: C:\Users\gillianc\Documents\21030-Buena-Park-USD-Whitaker-MPR-A19_gilliancAYBSV.rvt

NOTES:
1. POCKET TO ACCOMMODATE DBL STACKING TABLES, VERIFY HT/DEPTH W/ FOLDING TABLE MFR REQ'S
2. FOR MORE INFO, SEE 7/S1.1

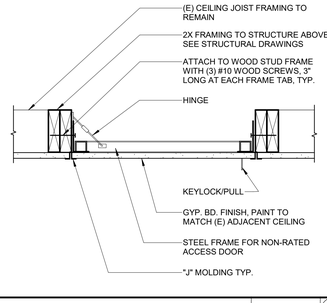


LUNCH TABLE FURRING SECTION 1 1/2" = 1'-0" (21)

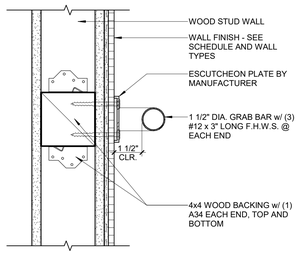
NOTES:
1. WHERE CLIPS ARE TO BE INSTALLED BACK-TO-BACK ON STUDS, STAGGER CLIPS ON EA SIDE OF STUDS
2. FOR LOCATIONS WHERE WOOD BLOCKING WOULD INTERFERE W/ CONDUITS, ETC. SEE 12/A10.2



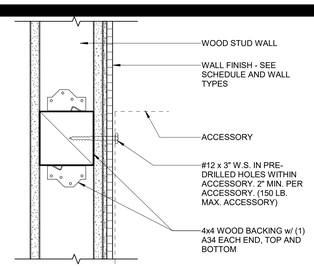
TYPICAL WALL BLOCKING 3" = 1'-0" (16)



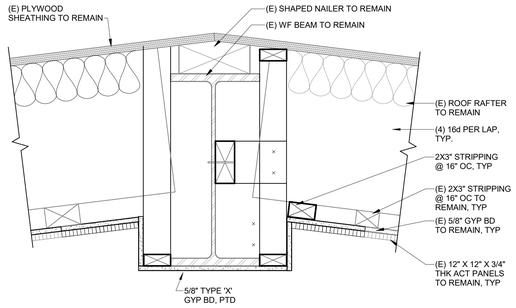
CEILING ACCESS PANEL 1 1/2" = 1'-0" (11)



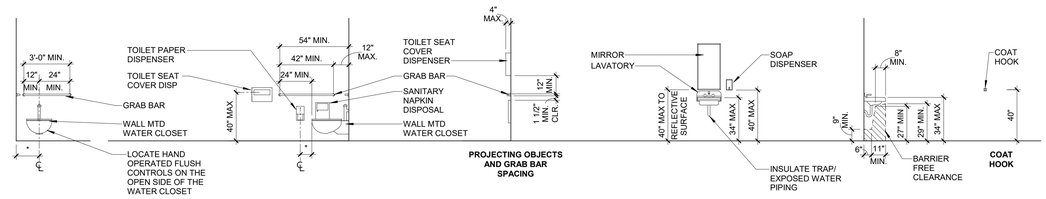
GRAB BAR ANCHORAGE 3" = 1'-0" (6)



TYPICAL ACCESSORY MOUNTING 3" = 1'-0" (1)

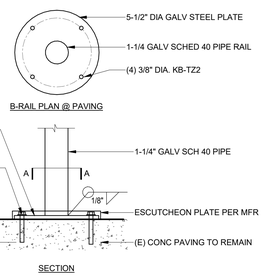


SOFFIT FRAMING 1 1/2" = 1'-0" (17)

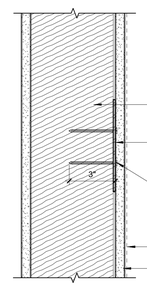


NOTES:
1. SEE TOILET FIXTURE/ACCESSORY SCHEDULE FOR MORE INFO
2. FOR TYPICAL ACCESSORY MOUNTING SEE DETAIL 1 / A10.2

PLUMBING FIXTURE AND RESTROOM ACCESSORY MOUNTING HEIGHTS 1/4" = 1'-0" (2)



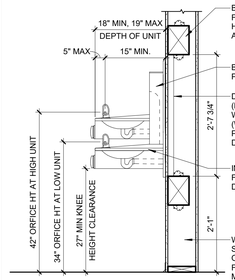
DRINKING FOUNTAIN RAIL ANCHORAGE 3" = 1'-0" (28)



NOTE: FLAT STRAP BACKING IS AN ALTERNATIVE FOR AREAS WHERE BLOCKING IS REQUIRED BY CASEWORK OR ACCESSORIES, BUT STANDARD WOOD BLOCKING IS NOT FEASIBLE DUE TO CONDUIT AND OTHER STUD BAY ITEMS.

WOOD STUD FRAMING PER PLAN
16. GA. X 6" FLAT STRAP BACKING. FULL LENGTH OF CASEWORK OR ACCESSORY
(2) #8 WOOD SCREWS WITH MIN. 3" EMBED INTO EVERY STUD FOR LENGTH OF CASEWORK OR ACCESSORY
FINISH AS SCHEDULED
GYPSUM BOARD AS SCHEDULED

FLAT STRAP BACKING 3" = 1'-0" (18)



BLOCKING FOR DRINKING FOUNTAIN FRAME, VERIFY HEIGHTS WITH MFR - FOR ATTACHMENT SEE 16/A10.2
BOTTLE FILLER PER MFR, SEE PLUMBING DWGS
DRINKING FOUNTAIN FRAME (BY MFR) FASTENED TO WALL STUDS OR BLOCKING (WHERE OCCURS) THRU PRE-DRILLED HOLES W/ 5/16" DIA. X 2.5" LAG BOLTS
INTERIOR DRINKING FOUNTAIN, SEE PLUMBING DWGS.
WOOD STUD WALL AS SCHEDULED W/ 37 1/2" WIDE OPENING FOR DRINKING FOUNTAIN FRAME - VERIFY W/ MFR

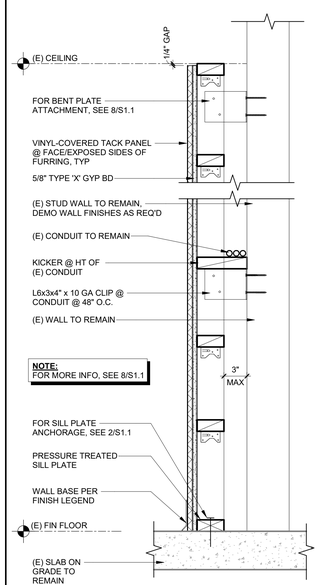
REF: 14 / A10.2

HI LO DRINKING FOUNTAIN SECTION AND CLEARANCES 3/4" = 1'-0" (13)

FIXTURE	DIMENSION REFERENCE	ADULT DIMENSION	PER TABLE 11B-604.9 (2019 CBC) SUGGESTED DIMENSIONS FOR CHILDREN		2019 CBC REFERENCES: T: TABLE S: SECTION F: FIGURE
			AGES 5-8	AGES 9-12	
GRAB BAR	TOP OF GRIPPING SURFACE	33" - 36"	20" - 25"	25" - 27"	T: 11B-604.9
TOILET PARTITION/ URINAL SCREEN	TOE CLEARANCE	9" MIN.	12" MIN.		
SOAP DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
ELECTRIC HAND DRYER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART	4" MAX PROJECTION FROM WALL, TYP		S: 11B-603.5
PAPER TOWEL DISPENSER/ WASTE RECEPTACLE	ABOVE FINISH FLOOR	40" MAX. TO TOP OF OPENING			S: 11B-603.5
SEAT COVER DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
MIRROR	BOTTOM EDGE OF REFLECTING SURFACE	40" MAX. ABOVE LAVATORY OR COUNTERTOP 35" MAX. NOT ABOVE LAVATORY OR COUNTERTOP			S: 11B-603.3
	BOTTOM EDGE OF REFLECTING SURFACE	20" MAX. IN DRESSING, FITTING, & LOCKER ROOMS			S: 11B-803.6
TOILET PAPER DISPENSER	OUTLET HEIGHT	19" MIN.	14" - 17"	17" - 19"	T: 11B-604.9 S: 11B-604.7
	FURTHEST IN FRONT OF WATER CLOSET	7" MIN. - 9" MAX. TO CENTERLINE OF DISPENSER			
SANITARY NAPKIN DISPENSER	ABOVE FINISH FLOOR	40" MAX. TO CENTERLINE OF OPERABLE PART			S: 11B-603.5
SANITARY NAPKIN DISPOSAL	BETWEEN REAR WALL AND TOILET PAPER DISPENSER	19" MIN. A.F.F. TO BOTTOM OF OPENING	N/A		
COAT HOOK	ABOVE FINISH FLOOR - TOP OF HOOK	40" - 48"			S: 11B-604.8.3
HI-LO DRINKING FOUNTAIN	HIGH SPOUT HEIGHT	38" MIN. - 43" MAX.			S: 11B-602.7
	LOW SPOUT APPROACH, HEIGHT, AND LOCATION FROM FRONT EDGE OF THE UNIT INCLUDING BUMPERS	FRONT APPROACH PER 11B-306, 36" MAX. A.F.F., AND 5" MAX. FROM FRONT EDGE OF UNIT.			S:11B-602.2-EXC. S:11B-602.4 S:11B-602.5
	OPERABLE PARTS	6" MAX. FROM FRONT EDGE OF UNIT			S: 11B-602.3
	PROJECTION	18" - 19"			S: 11B-602.9
STANDARD WATER CLOSET					
ACCESSIBLE WATER CLOSET	CENTERLINE FROM WALL (TOILET OFFSET)	17" - 18" WHEEL CHAIR 17" - 19" AMBULATORY	12" - 15"	15" - 18"	T: 11B-604.9
	SEAT HEIGHT (TOP OF SEAT)	17" - 19"	12" - 15"	15" - 17"	T: 11B-604.9
STANDARD URINAL	RIM HEIGHT	24"			
ACCESSIBLE URINAL	RIM HEIGHT	17" MAX.			S: 11B-605.2
	PROJECTION	13 1/2" MIN.			S: 11B-605.2
	FLUSH CONTROL HEIGHT	44" MAX.			S: 11B-605.4
LAVATORY (W/ INSULATED SUPPLY AND DRAIN PIPES. NO ABRASIVE SURFACES OR SHARP EDGES ALLOWED.)	SINK RIM HEIGHT	34" MAX.	31" MAX.		S: 11B-606.2 S: 11B-606.3
	SINK KNEE CLEARANCE	27" MIN. KNEE CLEARANCE/ 29" APRON	24" MIN.		S: 11B-606.2 F: 11B-306.3

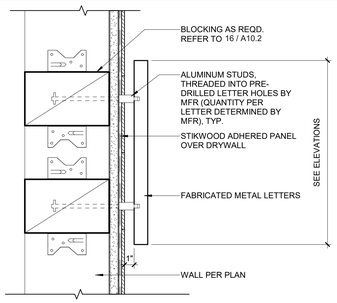
NOTES:
1. ALL FIXTURES AND ACCESSORIES ARE ACCESSIBLE UNLESS OTHERWISE NOTED OR DIMENSIONED.
2. SEE ENLARGED TOILET PLAN DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
3. ALL ACCESSORIES ARE TO BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 3'-4" FROM FLOOR TO CENTER OF FUNCTIONAL POINT.
4. ALL HEIGHT DIMENSIONS ARE A.F.F. (OR A.F.G. FOR EXTERIOR). ALL HORIZONTAL DIMENSIONS ARE TO FACE OF FINISH.
5. FOR TYPICAL ACCESSORY BACKING INFORMATION, SEE DETAIL 1 / A10.2

TOILET FIXTURE AND RESTROOM ACCESSORY SCHEDULE 1/2" = 1'-0" (4)



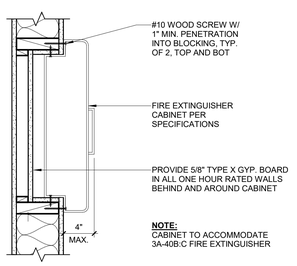
REF: 10 / A2.1

WALL FURRING @ MPR 1 1/2" = 1'-0" (30)



REF: 8B / A7.2

LETTER ATTACHMENT 3" = 1'-0" (24)

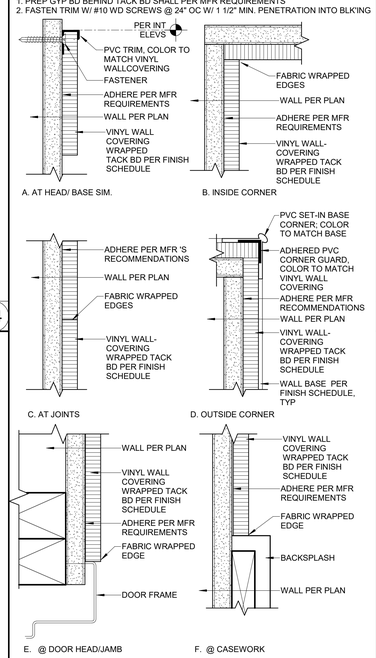


NOTE:
CABINET TO ACCOMMODATE 3A-40B:C FIRE EXTINGUISHER

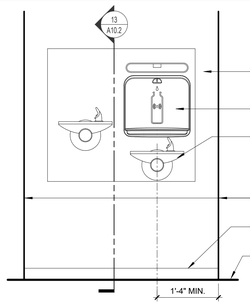
REF: 10 / A10.2

FIRE EXTINGUISHER CABINET ANCHORAGE 1 1/2" = 1'-0" (25)

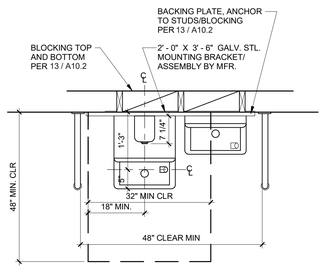
NOTES:
1. PREP GYP BD BEHIND TACK BD SHALL PER MFR REQUIREMENTS
2. FASTEN TRIM W/ #10 WD SCREWS @ 24" OC W/ 1 1/2" MIN. PENETRATION INTO BLK'ING



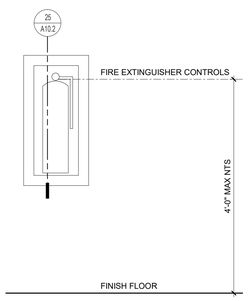
TACKBOARD ATTACHMENT 6" = 1'-0" (20)



HI-LO DRINKING FOUNTAIN 3/4" = 1'-0" (14)



ACCESSIBLE DRINKING FOUNTAIN 3/4" = 1'-0" (15)



FIRE EXTINGUISHER CABINET MOUNTING 1" = 1'-0" (10)

DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

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400 Spectrum Center Drive, Suite 1640
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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRYAN P. WHITMORE NO. C 30345 EXP. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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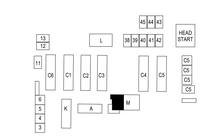
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

INTERIOR DETAILS

Date	Project Number
03/04/2022	21030
Application Number	Drawing Number
04-120689	A10.2
Drawn / Author	Checked / Checker

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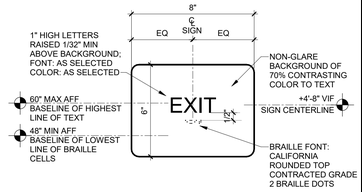
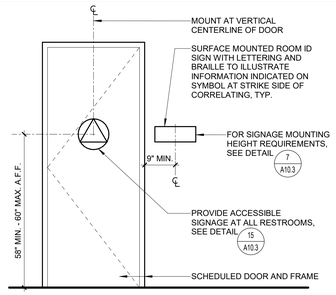


NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

EXIT SIGN "S3" 3" = 1'-0" 11



SIGN MOUNTING ELEVATION 1/2" = 1'-0" 6

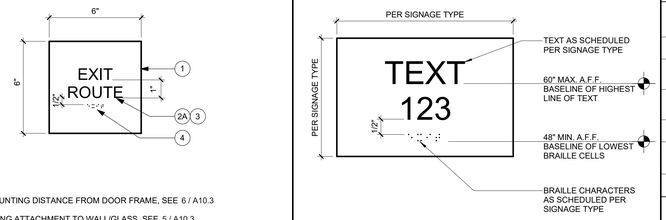
SIGNAGE GENERAL NOTES

1. FOR TYPICAL MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENTS, SEE 5 / A10.3
3. FOR SIGNAGE MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3

SIGNAGE KEYNOTES

1. 1/4" THICK EXTRUDED CLEAR ACRYLIC SIGN WITH NON GLARE BACKGROUND OF 70% CONTRASTING COLOR TO TEXT AND ONE PIECE CONSTRUCTION PER SPEC BACKGROUND COLOR: TBD
2A. 1/32" RAISED TEXT, CENTER JUSTIFIED ON PLAQUE TEXT STYLE: HELVETICA, ALL CAPS TEXT HEIGHT: 3/4" U.O.N. TEXT COLOR: TBD
2B. 1/32" RAISED TEXT, LEFT JUSTIFIED STYLE: HELVETICA, ALL CAPS TEXT HEIGHT: 3/4" U.O.N. TEXT COLOR: TBD
3. VERIFY ROOM NAMES/NO'S PRIOR TO FABRICATION; 10 LETTERS PER LINE, MAX
4. CALIFORNIA ROUNDED TOP CONTRACTED GRADE 2 BRAILLE BELOW RAISED TEXT (11B-703.3.2). DISTANCE FROM BOTTOM OF RAISED LETTERS TO TOP OF BRAILLE CHARACTERS SHALL BE 3/8" MINIMUM AND 1/2" MAXIMUM. BRAILLE TO BE CENTER JUSTIFIED OR LEFT JUSTIFIED TO MATCH RAISED TEXT. FOR MORE INFORMATION ON BRAILLE REQUIREMENTS, SEE DETAIL 4 / A10.3
5. INTERNATIONAL SYMBOL OF ACCESSIBILITY PICTOGRAM; COLOR: TBD
6. NOT USED
7. RAISED IMAGE-COLOR: TBD
8. CONTRAST 70% WITH DOOR COLOR

TYPICAL SIGNAGE NOTES 12" = 1'-0" 1



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

EXIT ROUTE SIGN "S4" 3" = 1'-0" 12

SIGNAGE MOUNTING HEIGHTS 6" = 1'-0" 7

TABLE 11B-703.3.1
BRAILLE DIMENSIONS

MEASUREMENT RANGE	MINIMUM IN INCHES MAXIMUM IN INCHES
DOT BASE DIAMETER	0.059" (1.5MM) TO 0.063" (1.6MM)
DISTANCE BETWEEN TWO DOTS IN THE SAME CELL *	0.100" (2.5MM)
DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS *	0.300" (7.6MM)
DOT HEIGHT RANGE	0.025" (0.6MM) TO 0.037 (0.9MM)
DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW *	0.395" (10MM) TO 0.400" (10.2MM)
* MEASURED CENTER TO CENTER	

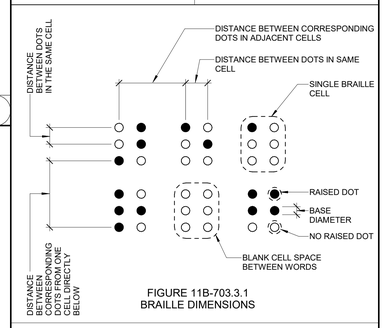
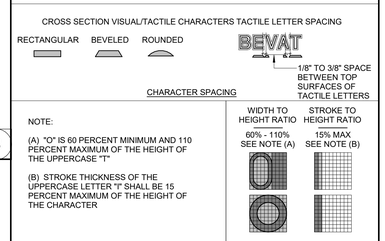


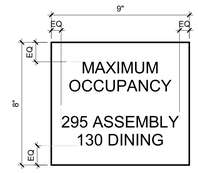
FIGURE 11B-703.3.1
BRAILLE DIMENSIONS



LINE SPACING PER 11B-703.2.8, TYPICAL

SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF RAISED CHARACTERS WITHIN A MESSAGE SHALL BE 135 PERCENT MINIMUM AND 170 PERCENT MAXIMUM OF THE RAISED CHARACTER HEIGHT.

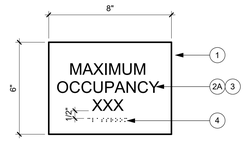
SIGNAGE DESIGN REQUIREMENTS 1 1/2" = 1'-0" 4



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

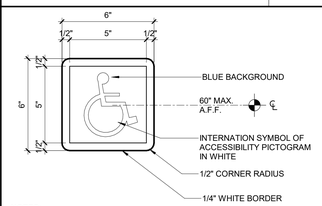
OCCUPANT LOAD SIGN 3" = 1'-0" 18



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

MAXIMUM OCCUPANCY SIGN "S5" 3" = 1'-0" 13



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3
6. SYMBOL PROPORTIONS SHALL APPROXIMATE CBC FIGURE 11B-703.7.2.1.

ACCESSIBLE ENTRY SIGN "S1" 3" = 1'-0" 8

NOTES:

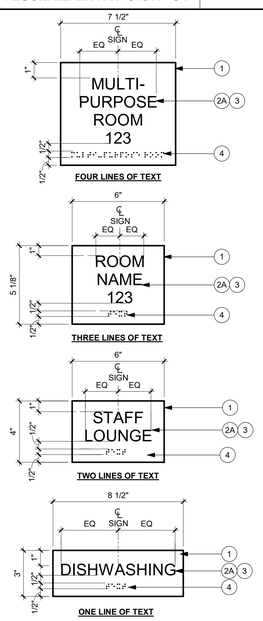
1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3
6. SYMBOL PROPORTIONS SHALL APPROXIMATE CBC FIGURE 11B-703.7.2.4.

ALS SIGN "S8" 3" = 1'-0" 19

NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

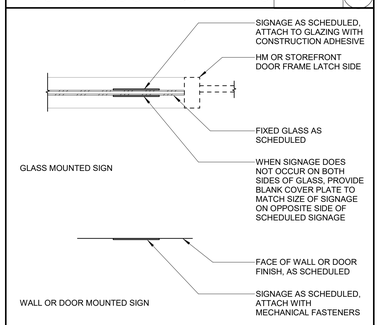
ALL GENDER RR WALL SIGN "S6" 3" = 1'-0" 14



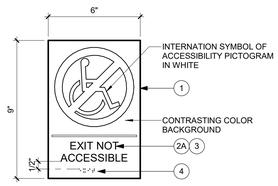
NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

ROOM ID SIGN "S2" 3" = 1'-0" 10



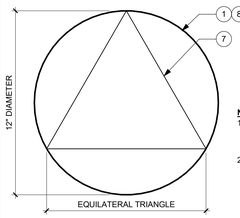
SIGNAGE MOUNTING TYPES 1" = 1'-0" 5



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3
3. FOR TYP DESIGN REQUIREMENTS, SEE 4 / A10.3
4. FOR MOUNTING HEIGHT REQUIREMENTS, SEE 7 / A10.3
5. FOR ADDITIONAL INFORMATION, SEE 1 / A10.3

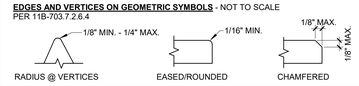
INACCESSIBLE EXIT SIGN "S9" 3" = 1'-0" 20



NOTES:

1. FOR TYP MOUNTING DISTANCE FROM DOOR FRAME, SEE 6 / A10.3
2. FOR MOUNTING ATTACHMENT TO WALL/GLASS, SEE 5 / A10.3

EDGES AND VERTICES ON GEOMETRIC SYMBOLS - NOT TO SCALE
PER 11B-703.7.2.6.4



ALL GENDER DOOR SIGN "S7" 3" = 1'-0" 15

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ARCHITECT	ENGINEER
LICENSED ARCHITECT BRIAN P. WHITMORE NO. C 30345 EXP. 12/31/23 STATE OF CALIFORNIA DATE SIGNED: 03/04/2022	

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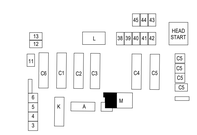
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



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6885 ORANGETHORPE AVE.
BUENA PARK, CA

DSA BACKCHECK

WHITAKER ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

SIGNAGE DETAILS

Date	Project Number
03/04/2022	21030
Application Number	Drawing Number
04-120689	A10.3
Drawn / Author	Checked / Checker

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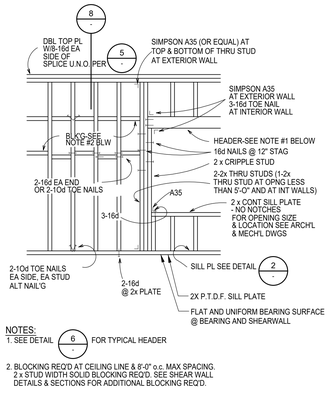


NOTES:
1. SEE DETAIL 6 FOR TYPICAL HEADER
2. BLOCKING REQ'D AT CEILING LINE & 8'-0" o.c. MAX SPACING. 2 x STUD WIDTH SOLID BLOCKING REQ'D. SEE SHEAR WALL DETAILS & SECTIONS FOR ADDITIONAL BLOCKING REQ'D.

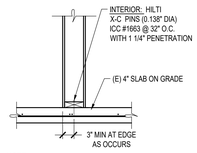
(N) NON BRG WALL TO SLAB | 3/4" | 9

CLEAR OPNG WIDTH	HEADER SIZE	REMARKS
TO 4'-0"	4x6	
4'-1" TO 6'-0"	6x6	
6'-1" TO 8'-0"	6x8	
8'-1" TO 10'-0"	6x10	2-CRIPPLE STUDS U.N.O.
10'-1" TO 12'-0"	6x12	2-CRIPPLE STUDS U.N.O.

NOTE:

USE ABOVE SCHEDULED SIZES ONLY WHERE SIZE IS NOT INDICATED ON PLANS & DETAILS AND ONLY AFTER PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER & D.S.A. IF SPAN EXCEEDS 12'-0".

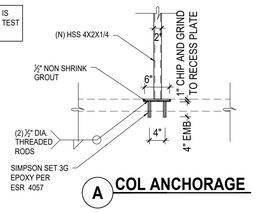
HEADER SCHEDULE | 3/4" | 6



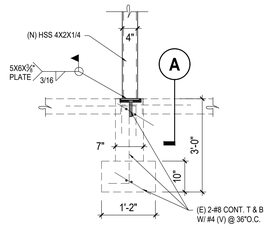
NOTE:
PROVIDE WASHER AT ALL ANCHOR PINS.

(N) NON BRG WALL TO SLAB | 3/4" | 2

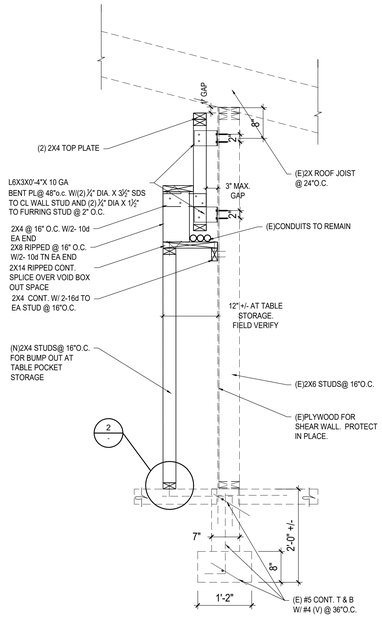
DSA SPECIAL INSPECTION IS REQUIRED. ANCHOR PULL TEST WILL NOT BE REQUIRED.



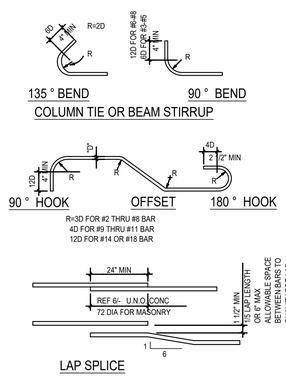
A COL ANCHORAGE



(N)COLUMN DOOR STIFFNER | 3/4" | 10

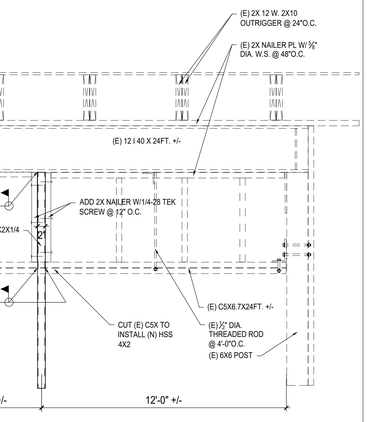


(N)TABLE FURRING WALL | 3/4" | 7

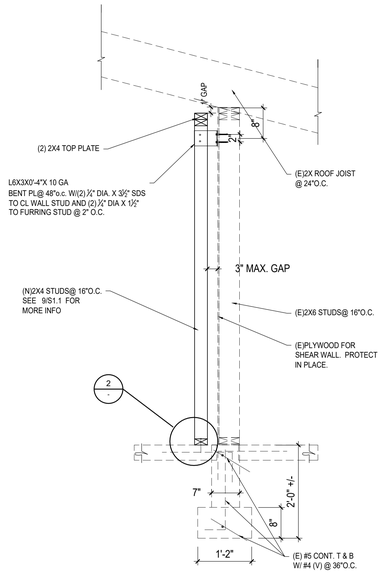


LAP SPLICE

REINFORCING STEEL DETAILS | 3/4" | 3



(N)COLUMN DOOR STIFFNER | 3/4" | 11

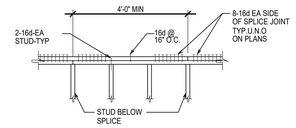


(N) INTERIOR FURRING WALL | 3/4" | 8

JOIST OR RAFTER TO SIDE OF STUD:	
8" DEEP JOIST OR LESS	3 - 16d
EACH ADDITIONAL 4" OF DEPTH	1 - 16d
BRIDGING TO JOIST:	
TOE NAIL EACH END	2 - 8d
BLOCKING BETWEEN JOISTS OR RAFTERS:	
TOE NAIL EACH SIDE, EACH END	2 - 10d *
BLOCKING BETWEEN STUDS:	
TOENAIL	4 - 8d
OR END NAIL	2 - 16d
1"x6" SUBFLOOR OR LESS TO EACH JOIST, FACE NAIL	2 - 8d
WIDER THAN 1"x6" SUBFLOOR TO EA. JOIST, FACE NAIL	3 - 8d
2" SUBFLOOR TO JOIST OR GIRDER, BLIND & FACE NAIL	2 - 16d
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL	16d @ 16"
SOLE PLATE TO JOIST OR BLKG. @ BRACED WALL PANELS	16d @ 16"
TOP PLATE TO STUD, END NAIL	2 - 16d
STUD TO SOLE PLATE:	
TOENAIL	4 - 8d
OR END NAIL	2 - 16d
DOUBLE STUDS, FACE NAIL	16d @ 24"
DOUBLE TOP PLATES, FACE NAIL	16d @ 16"
DOUBLE TOP PLATES, LAP SPLICE	8 - 16d
BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE:	
TOENAIL	3 - 8d
RIM JOIST TO TOP PLATE:	
TOENAIL	8d @ 6"
TOP PLATES, LAPS & INTERSECTIONS, FACE NAIL	2 - 16d
CONTINUOUS HEADER, TWO PIECES - ALONG EA. EDGE	16d @ 16"
CEILING JOIST TO PLATE, TOENAIL	3 - 8d
CONTINUOUS HEADER TO STUD, TOENAIL	4 - 8d
CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL	3 - 16d
CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	3 - 16d
JOIST OR RAFTER AT ALL BEARINGS:	
TOE NAIL EACH SIDE	2 - 10d
1" BRACE TO EACH STUD & PLATE, FACE NAIL	2 - 8d
1"x8" SHEATHING OR LESS TO EA. BEARING, FACE NAIL	2 - 8d
WIDER THAN 1"x8" SHTG TO EA BEARING, FACE NAIL	3 - 8d
BUILT UP CORNER STUDS	16d @ 24"
BUILT UP GIRDER AND BEAMS:	
ALONG TOP AND BOTTOM OF BEAM OR JOIST	20d @ 32"
AT ENDS AND AT EACH SPLICE, STAGGER	2 - 20d
2" PLANKS, AT EA BEARING	2 - 16d
COMMON SHALL BE USED EXCEPT WHERE OTHERWISE STATED.	

* WHEN POSSIBLE, NAILS DRIVEN PERPENDICULAR TO THE GRAIN SHALL BE USED INSTEAD OF TOE NAILS.

NAILING SCHEDULE | 3/4" | 4



NOTE:
PROVIDE SPLICE W/ 3-16d AT PLATE LAPS AT CORNERS & INTERSECTIONS.

TOP PLATE SPLICE | 3/4" | 5

WOOD

1. ALL WOOD MEMBERS SHALL BE DOUGLAS FIR LARCH #1 GRADE, EXCEPT BLOCKING MAY BE #2 GRADE, CONFORMING TO THE WCLIB GRADING RULES #16, OR AS SPECIFICALLY CALLED FOR ON THE DRAWINGS. EACH PIECE OF LUMBER SHALL BE GRADE MARKED. ALL MEMBERS TO HAVE MOISTURE CONTENT LESS THAN 19% AT TIME OF INSTALLATION.
2. ALL LUMBER WHICH COMES IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE DOUGLAS FIR NO. 2 OR BETTER, PRESSURE TREATED AND BEAR THE MARK INDICATING CONFORMANCE WITH THE REQUIREMENTS OF AWPA STANDARD U1 AND T1. THE LUMBER SHALL BE PRESSURE TREATED WITH THE CHEMICAL ACZA, BORATE OR EQUAL. WHERE SILLS ARE CUT, DRILLED OR NOTCHED THEY SHALL BE TREATED WITH A PRESERVATIVE THAT MEETS THE AWPA STANDARD U1 AND APPROVED BY THE ARCHITECT AND THE ENFORCEMENT AGENCY. ON ALL EXPOSED SURFACES FROM WHICH THE PRESERVATIVE TREATMENT HAS BEEN REMOVED. SILLS AT SHEAR WALLS AND BEARING WALLS SHALL BE FLAT AND UNIFORM ON CONCRETE SURFACE SO AS TO OBTAIN CONTINUOUS BEARING.
3. ALL PLYWOOD SHALL BE MANUFACTURED USING EXTERIOR GLUE AND SHALL CONFORM TO U.S. PRODUCT STANDARD PS-1, SECTION 7. PANELS SHALL CONFORM TO THE GRADES SPECIFIED ON THE DRAWINGS. PANELS EXPOSED TO WEATHER SHALL BE EXTERIOR GRADE. EACH PANEL SHALL BEAR MARKINGS IDENTIFYING THE QUALIFIED TESTING AND INSPECTION AGENCY, GRADE, NOMINAL THICKNESS, SPAN RATING, EXPOSURE DURABILITY CLASSIFICATION AND STANDARD TO WHICH IT IS CERTIFIED.
4. USE OF MACHINE NAILING IS SUBJECT TO A SATISFACTORY JOB SITE DEMONSTRATION FOR EACH PROJECT AND THE APPROVAL OF THE PROJECT ARCHITECT OR STRUCTURAL ENGINEER AND THE ENFORCEMENT AGENCY. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING IS NOT ALLOWED FOR 5/16 INCH PLYWOOD. IF THE NAIL HEADS PENETRATE THE OUTER PLY MORE THAN WOULD BE NORMAL FOR A HAND HELD HAMMER, OR IF MINIMUM ALLOWABLE EDGE DISTANCES ARE NOTE MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY AND MACHINE NAILING SHALL BE DISCONTINUED.
5. ALL BOLTED CONNECTIONS ARE TO BE RETIGHTENED PRIOR TO CLOSING IN.
6. NAILING SHALL BE WITH COMMON NAILS AND SHALL CONFORM TO THE CBC NAILING SCHEDULE TABLE 2304.10.1
7. SHEET METAL HANGERS, TIES, BRIDGING ANCHORS, ETC. SHALL BE BY THE SIMPSON COMPANY OR APPROVED EQUAL.
8. BLOCKING AND BRIDGING TO BE PROVIDED PER CBC 2308.4.6
9. FOR 10d NAILS AT PLYWOOD SHEAR WALLS AND ROOF DIAPHRAGMS, PROVIDE 1 1/2" MINIMUM PENETRATION INTO FRAMING PER AWS SDPWS (FORMERLY ANSI7AF & PA SDPWS) TABLES.

EXPANSION OR EPOXY - TYPE ANCHORS

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2019 CBC 1910A.5
2. INSTALLATION SHALL BE CONTINUOUSLY INSPECTED IN ACCORDANCE WITH ICC EVALUATION .
3. LOAD TEST FOR VALUES SHOWN U.N.O. ARE IN ACCORDANCE WITH CBC, SECTION 1910A.5.4
4. ALL EXPANSION BOLTS TO BE USED SHALL BE HILTI KB-TZ2 ANCHORS TYP PER ICC ESR-4266. ALL EPOXY BOLTS SHALL BE SIMPSON SET- 3G PER ICC ESR-4057. NO SUBSTITUTION SHALL BE MADE WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.

   HILTI KB TZ BOLT TESTING TABLE. FOR EPOXY BOLTS SEE SPECIFIC DETAIL FOR EMBEDMENT AND DIRECT PULL TESTING LOAD.

BOLT DIA.	MINIMUM DEPTH OF EMBEDMENT	REQUIRED INSTALLATION TORQUE FOR EXPANSION BOLT
3/8"	2"	25 FT-LBS
1/2"	3 1/4"	40 FT- LBS
5/8"	4"	60 FT- LBS
3/4"	4 3/4"	110 FT- LBS

TABLE NOTES:

A. TABULATED VALUES ARE BASED ONTHE ICC ESR REPORT #4266 AND SHALL BE INSTALLED WITH SPECIAL INSPECTION. THE TABULATED VALUES ARE FOR ANCHORS INSTALLED A MINIMUM OF 12 DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 12 DIAMETERS. SEE CBC 1910A.5.5 FOR ACCEPTANCE AND FAILURE CRITERIA.

B. WHEN THE EXPANSION-TYPE ANCHORS ARE TO BE USED FOR SILL PLATE BOLTING APPLICATIONS, 10% OF THE ANCHORS SHALL BE TENSION TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR OTHER STRUCTURAL APPLICATIONS, ALL SUCH EXPANSION ANCHORS SHALL BE TESTED. WHEN EXPANSION-TYPE ANCHORS ARE USED FOR NONSTRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE, 50% OR ALTERNATE BOLTS IN A GROUP SHALL BE TENSION TESTED.

C. THE TESTING OF THE EXPANSION AND EPOXY ANCHORS SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO DSA ENFORCEMENT AGENCY. IF ANY ANCHORS FAIL THE TENSION-TESTING REQUIREMENTS, DSA ENFORCEMENT AGENCY SHALL DETERMINE IF THE PROPOSED ADDITIONAL TESTING REQUIREMENTS ARE ACCEPTABLE.

POWDER DRIVEN SHOT PINS (LOW VELOCITY)

1. SHOT PINS MAY BE USED FOR SHEAR LOADS AND THEY MAY BE USED IN TENSION TO SUPPORT LOADS LESS THAN 90 POUNDS FOR MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT, ETC. ANY SHOT ANCHORS MUST HAVE ICBO APPROVAL FOR USE ON CONCRETE CURBS.
2. THE ALLOWABLE LOADS SHALL BE 90 POUNDS OR 80 % OF ESR APPROVED VALUES, WHICHEVER IS LESS. QUALIFICATIONS FOR USE OF ALL POWER ACTUATED TOOLS MUST MEET ANSI A10.3 STANDARD AS REQUIRED BY THE MANUFACTURER AND ALL OSHA REQUIREMENTS.
3. TESTING - THE OPERATOR, TOOL AND FASTENER SHALL BE PRE - QUALIFIED BY THE PROJECT INSPECTOR. THE INSPECTOR SHALL OBSERVE THE TESTING OF THE FIRST 1- FASTENER INSTALLATIONS. A TEST "PULL - OUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER, RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE OF APPROXIMATELY 1 IN 10 PINS. IF ANY PIN FAILS TESTING, TEST ALL PINS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL (20) CONSECUTIVE PASS, THEN RESUME THE INITIAL TESTING FREQUENCY.
4. SHOT PINS SHALL BE HILTI. X - U (ESR 2269) AND CAN BE USED TO CONNECT METAL STUD TRACK OR WOOD SILL TO
   - CONCRETE — X - U 0.157 SHANK DIA. W/ 1-1/2" MIN.\ PENETRATION

GENERAL

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE 2019 CALIFORNIA BUILDING CODE AND ALL LOCAL CODES.
2. STRUCTURAL DRAWINGS ARE PARTS OF CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND COORDINATE WITH ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS, AND SHALL NOTIFY THE ARCHITECT AND ENGINEERS OF ANY DISCREPANCIES.
3. STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR SHALL PROVIDE MEANS AND METHODS AS REQUIRED. PROVIDE ADEQUATE BRACING, SHORING, TEMPORARY STRUCTURES AND PARTIALLY COMPLETED PORTIONS OF WORKS COMPLYING WITH NATIONAL, STATE AND ALL LOCAL SAFETY ORDINANCES.
4. TYPICAL DETAILS AND SCHEDULES MAY NOT BE REFERENCED ON DRAWINGS. CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH ALL TYPICAL DETAILS AND SCHEDULES PRIOR TO PROCEED WITH WORK.
5. CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM ALL DAMAGE.
6. THE CONTRACTOR SHALL NOT DEVIATE FROM THE TENDERED DOCUMENTS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND ENGINEERS.
7. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. FOR ALL LOCATIONS OF DATUM ELEVATION 0.0; REFER TO ARCHITECTURAL AND SITE DRAWINGS. ALL ELEVATIONS INDICATED ON THE STRUCTURAL DRAWINGS ARE MEASURED WITH RESPECT TO THIS DATUM, UNLESS NOTED OTHERWISE.

DESIGN LOADS

1. WIND DESIGN LOADS
   - BASIC WIND SPEED.....105MPH
   - EXPOSURE..... C
   - INTERNAL PRESSURE COEFFICIENT..... ± 0.18
   - COMPONENT AND CLADDING..... -25 PSF (OUTWARD) +23 PSF (INWARD)
2. SEISMIC DESIGN LOADS
   - OCCUPANCY CATEGORY.....III
   - SITE CLASS.....D (DEFAULT)
   - SEISMIC DESIGN CATEGORY.....D
   - IMPORTANCE FACTOR.....1.25
   - S_s = 1.505 Fa=1.2
   - S_1 = 0.533 Fv=1.85
   - S_{DS} = 1.204
   - S_{D1} = 0.657 LATITUDE = 33.85557; LONGITUDE = -118.02128

BLDG	ANALYSIS PROCEDURE
ALL	STATIC

BLDG	DIRECTION	SEISMIC FORCE RESISTING SYSTEM	R	RHO	Cd	OMEGA	Cs
MPR	BOTH	LFWSW	6.5	1.0	4.0	2.5	0.232 (LRFD)

"LFWSW" - LIGHT FRAMED WOOD SHEAR WALL

3. ROOF LIVE LOAD = 20PSF

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A6 AND SHALL BE FABRICATED ACCORDING TO AISC PRACTICE AND SPECIFICATION FOR BUILDING.
2. MATERIALS: PROVIDE STRUCTURAL STEEL COMPLYING WITH UBC STANDARD AND ASTM STANDARD AS FOLLOWS, U.N.O.
   - A. ALL WIDE FLANGES — ASTM A992, GRADE 50
   - B. TUBES (HSS ROUNDS, HSS TUBES) — ASTM A500, GRADE B (46ksi @ HSS RECT, GRADE B (42 ksi @ ROUND HSS)
   - C. PIPES — ASTM A53, GRADE B (35ksi)
   - D. CHANNELS, ANGLES, PLATES — ASTM A36 (U.O.N.)
   - E. ANCHOR BOLTS — ASTM F1554 (36 KSI, U.N.O.)
   - F. THREADED ROD — ASTM A36
3. BOLTS
   - A. UUSE ASTM A307 BOLTS, NUTS AND WASHERS UNLESS NOTED OTHERWISE.
   - B. STANDARD BOLT HOLE SHALL BE 1/16" LARGER IN DIAMETER THAN NORMAL BOLT DIAMETER, U.N.O.
   - C. OVERSIZE BOLTS HOLES FOR ANCHOR BOLTS IN BASE PLATE MAY BE ALLOWED BY PROVIDING 3-1/2" SQUARE PLATE WASHERS UNDER NUT U.N.O. THICKNESS OF PLATE WASHER SHALL BE 0.5 TIMES THE DIAMETER OF ANCHOR BOLTS U.N.O. USE 5/16 INCH FILLET WELD AROUND PLATE WASHER U.N.O.
4. WELDING
   - A. ALL WELDS SHALL BE DONE USING THE SHIELDED ELECTRIC ARC PROCESS BY AWS CERTIFIED WELDERS USING AWS D1.1 LOW - HYDROGEN E70XX ELECTRODES.
   - B. ALL WELDS USED IN PRIMARY MEMBERS AND CONNECTIONS IN THE LATERAL FORCE SYSTEMS SHALL BE MADE WITH A FILLER MATERIAL THAT HAS A MINIMUM CHARPY V - NOTCH TOUGHNESS OF 20FT-LBS AT MINUS 20 DEGREES F. AS DETERMINED BY AWS CLASSIFICATION.
   - C. CONTINUOUS INSPECTION IS REQUIRED FOR ALL FIELD AND SHOP WELDING BY AN INSPECTOR APPROVED BY GOVERNING CODE - AUTHORITY (DSA FOR PUBLIC SCHOOLS)
   - D. WELDERS SHALL BE QUALIFIED AND CERTIFIED BY THE GOVERNING CODE AUTHORITY. (DSA FOR PUBLIC SCHOOLS)
5. STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED U.N.O. (SEE ARCHITECTURAL DRAWINGS FOR OTHER CONDITION)
6. STRUCTURAL STEEL SHOP DRAWINGS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

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ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER Exp. 6-30-22 STATE OF CALIFORNIA

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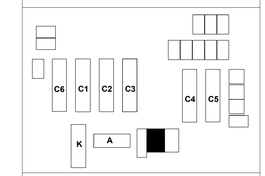
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA PLAN CHECK	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



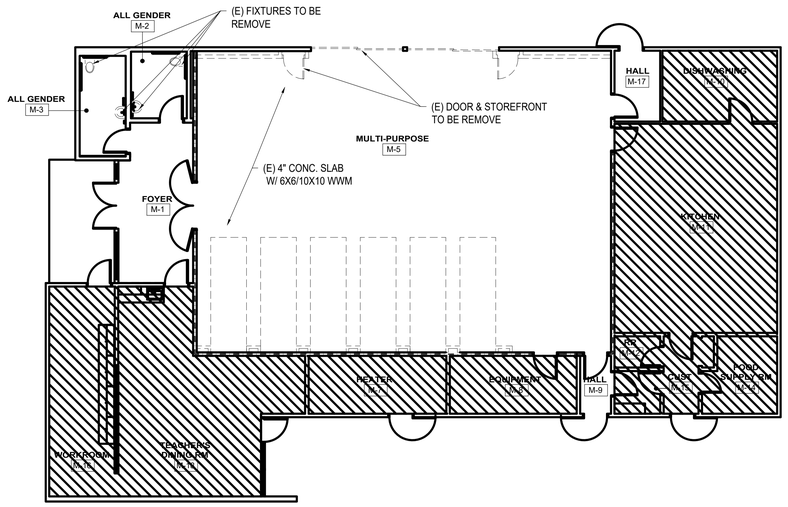
BUENA PARK SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

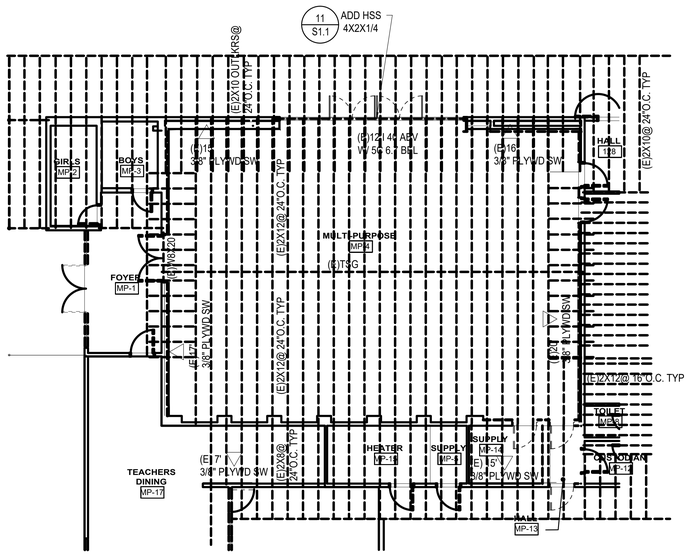
JAMES A. WHITAKER ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

GENERAL NOTES/ STRUCTURAL DETAILS

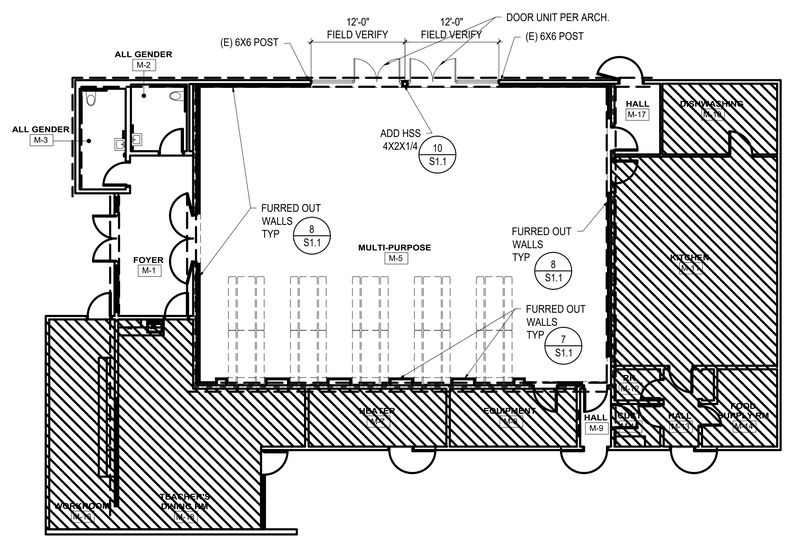
Date 3/4/2022	Project Number 21030
Scale AS NOTED	Drawing Number
Drawn MR / Checked SW	S1.1



MPR DEMO FLOOR PLAN | 1/8" = 1'-0" | 1



ROOF FRAMING PLAN | 1/8" = 1'-0" | 3



MPR FOUNDATION PLAN | 1/8" = 1'-0" | 2

KEYNOTES

NUMBER	NOTE

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DATE: 03/15/2022

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NO.	REMARKS	DATE

DRAWING STATUS

	DATE
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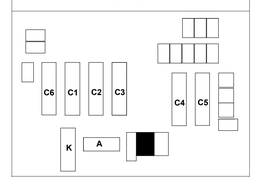
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK SCHOOL DISTRICT
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DSA BACKCHECK

JAMES A. WHITAKER ELEMENTARY SCHOOL MULTI-PURPOSE ROOM ALTERATION
8401 MONTANA AVE
BUENA PARK, CA 90621

DEMOLITION / (E)FOUNDATION AND (E)FRAMING PLANS

Date	Project Number
3/4/2022	21030
Scale	Drawing Number
AS NOTED	S2.1
Drawn: MR / Checked: SW	

FIXTURE SCHEDULE

ITEM	FIXTURE	ROUGH-IN CONNECTIONS: TRAP	WASTE	VENT	HOT WATER	COLD WATER	GAS	DESCRIPTION
WC 1	WATER CLOSET (ACCESSIBLE)	INT	4"	2"	--	1"	--	AMERICAN STANDARD (A/S) NO. 3461.001 "MADERA FLOWISE 16-1/2" HEIGHT ELONGATED FLUSHOMETER TOILET", SIPHON JET, FLOOR MOUNTED, ELONGATED BOWL, 16-1/2" HIGH. COMPLETE WITH SLOAN ROYAL NO. 111-1.28 GPF FLUSH VALVE, OLSONITE NO. 95SSCT SEAT AND A/S BOLT CAPS.
L 1	LAVATORY (ACCESSIBLE, CW ONLY)	1-1/4"	2"	1-1/2"	--	1/2"	--	AMERICAN STANDARD (A/S) NO. 0355.012 "LUCERNE WALL HUNG LAVATORY", 20" X 18", WALL HUNG. COMPLETE WITH CHICAGO NO. 3400-E39VPABCP METER FAUCET 0.35 GPM NON-AERATING SPRAY, McGUIRE NO. 155A 1-1/4" OUTLET "OPEN GRID P.O. PLUG", McGUIRE NO. PW8090NCO 1-1/4" L.A. PATTERN P-TRAP WITH TRAP AND SUPPLY COVERS, GALVANIZED NIPPLE AND CHROMIUM PLATED BRASS CASING, CHICAGO NO. 1017-ABCP LOOSE KEY STOP WITH RIGID SUPPLY, AND ZURN NO. Z-1231-EZR-WL ADJUSTABLE CONCEALED ARM CARRIER W/ SLEEVE FOR WASTE. MOUNT IN ACCORDANCE WITH ADA REQUIREMENTS.

ITEM	FIXTURE	ROUGH-IN CONNECTIONS: TRAP	WASTE	VENT	HOT WATER	COLD WATER	GAS	DESCRIPTION
WHA 1	WATER HAMMER ARRESTOR	--	--	--	--	--	--	ZURN NO. Z-1700 SERIES "SHOCKTROL" WATER HAMMER ARRESTOR COMPLETE BEHIND ACCESS PANEL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. ALL ACCESSIBLE WATER CLOSETS SHALL HAVE FLUSH VALVE WITH HANDLE ON OPEN SIDE.
3. ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON DRAWINGS.
4. ALL PLUMBING FIXTURE VENTS TO TERMINATE A MINIMUM OF 12 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM ANY OUTSIDE AIR INTAKES.
5. EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS.
6. CONNECTION BETWEEN INCOMPATIBLE MATERIALS ABOVE GRADE AND INSIDE BUILDING SHALL BE MADE WITH TWO (2) DIELECTRIC UNIONS SEPARATED BY A TWELVE INCH (12") SECTION OF RED BRASS PIPE.
7. ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. ALL URNINALS SHALL HAVE CLEANOUTS ABOVE FIXTURE, CPC 707.4. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
8. SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBLE FIXTURE LOCATIONS AND MOUNTING HEIGHTS. INSULATE ALL EXPOSED HOT WATER AND DRAIN PIPING BELOW ACCESSIBLE LAVATORIES AND SINKS.
9. ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING.
10. ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA PLUMBING CODE 2019.
11. THESE DRAWINGS INDICATE THE SEWER, WATER, AND STORM DRAIN SYSTEMS TO POINT OF CONNECTION 5'-0" OUTSIDE OF THE BUILDING. CONTINUATION OF THESE SYSTEMS IS SHOWN ON THE CIVIL DRAWINGS AND IS SPECIFIED UNDER ANOTHER SECTION OF THE SPECIFICATIONS. THE PIPING SHALL BE INSTALLED TO MEET THE INVERT ELEVATIONS SHOWN ON THE CIVIL DRAWINGS.
12. INSULATION (SEE SPECIFICATION FOR TYPE REQUIRED) AND COVERING ON PIPE AND TUBING SHALL HAVE A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DENSITY NOT TO EXCEED 450 WHEN TESTED IN ACCORDANCE WITH 2019 C.B.C. SECTION 720.3.
13. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHERE TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. CMC 2019, CHAPTERS 7, 9 ,& 11.
14. ANY ALTERATIONS TO A STRUCTURAL MEMBER, SUCH AS CUTTING, BORING, BRAZING, DRILLING, WELDING, ETC. SHALL HAVE PRIOR WRITTEN APPROVAL OF ARCHITECT, STRUCTURAL ENGINEER AND DSA.
15. M.E.P. COMPONENT ANCHORAGE NOTE:

    ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

    1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
    2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRE) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
    3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVER BY DSA.

15. CONT.

    THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REVERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENTS IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

    A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
    B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL

    THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE THE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE THE DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

16. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCE AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3, AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC SECTIONS 1617A.1.24, 1617A.1.25, AND 1616A.1.26.

    THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. OSHPD OPM FOR 2019 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

    MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

    MP [ ] MD [ ] PP [ ] E [ ] – OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

    MP [ ] MD [ ] PP [X] E [ ] – OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #0043-13.

    –

LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	S OR W	SOIL OR WASTE ABOVE FLOOR
	S OR W	SOIL OR WASTE BELOW FLOOR OR GRADE
	V	SANITARY VENT
	CW	COLD WATER
		DIRECTION OF FLOW
	SOV	SHUT-OFF VALVE
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
		RISER UP
		RISER DOWN
	ABV	ABOVE
	AP	ACCESS PANEL
	BEL	BELOW
	CLG	CEILING
	CONT	CONTINUATION
	COTG	CLEANOUT TO GRADE
	DN	DOWN
	EXIST	EXISTING
	FLR	FLOOR
	POC	POINT OF CONNECTION
	PLCS	PLACES

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

Studio W Architects
400 Spectrum
Center Drive
Suite 1640
Irvine, CA 92618
[T] 949.774.2905
www.StudioWArchitects.com

PDS
PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER ANDREW R. GOSSNER No. 37172 MECHANICAL STATE OF CALIFORNIA

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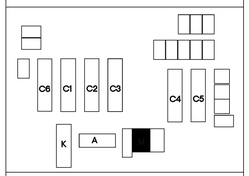
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



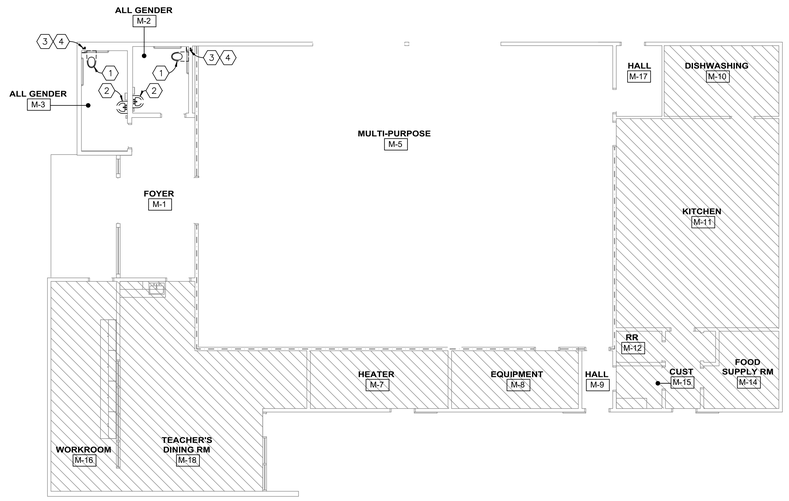
BUENA PARK
SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

JAMES A. WHITAKER
ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

PLUMBING LEGEND, SCHEDULE, AND GENERAL NOTES

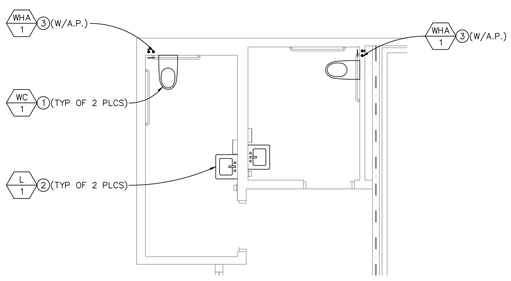
Date 03/04/2022	Project Number 21030
Scale NONE	Drawing Number
Drawn NH / Checked PDS	P0.1



NORTH

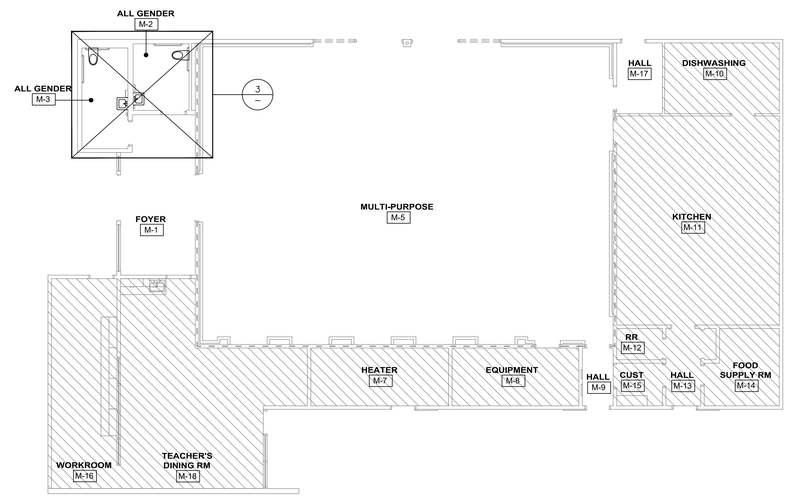
PLUMBING DEMOLITION FLOOR PLAN

SCALE 1/8"=1'-0" | 2



PLUMBING ENLARGED FLOOR PLAN

SCALE 1/4"=1'-0" | 3



NORTH

PLUMBING ALTERATION FLOOR PLAN

SCALE 1/8"=1'-0" | 1

KEYNOTES

DEMOLITION NOTES:

1. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL ITEMS INDICATED TO BE REMOVED. CONTRACTOR SHALL VERIFY ALL SUCH ITEMS WITH OWNER PRIOR TO REMOVAL. ALL ITEMS NOT REFUSED BY OWNER SHALL BE REMOVED INTACT AND FULLY FUNCTIONAL BY CONTRACTOR FOR OWNER'S USE. ALL ITEMS REFUSED BY OWNER SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR.
2. REMOVE EXISTING FIXTURES AND EQUIPMENT AS INDICATED. HOT WATER, COLD WATER, VENT AND/OR GAS PIPING SERVING SUCH ITEMS SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION WITHIN WALL OR ABOVE CEILING AND CAPPED OR PLUGGED UNLESS OTHERWISE NOTED (U.O.N.). WASTE PIPING SERVING SUCH FIXTURES SHALL BE REMOVED TO A SUITABLE CONCEALED LOCATION BELOW FINISHED FLOOR OR BEHIND WALL AND CAPPED OR PLUGGED U.O.N. ASSOCIATED EXISTING DEFUNCT PIPING IN CONCEALED LOCATIONS ABOVE CEILING, WITHIN WALLS, BELOW SLAB, OR BELOW GRADE SHALL BE ABANDONED IN PLACE OR REMOVED AS NECESSARY TO AVOID INTERFERENCE WITH NEW WORK. ASSOCIATED EXISTING DEFUNCT PIPING AND COMPONENTS IN EXPOSED LOCATIONS SHALL BE REMOVED U.O.N. (INCLUDING FLOOR DRAINS, WALL AND FLOOR CLEANOUTS, CLEANOUTS TO GRADE, ACCESS PANELS, SHUT-OFF VALVES AND COCKS, YARD BOXES, MANHOLES, CATCH BASINS, AND OTHER EXPOSED COMPONENTS). EXISTING DEFUNCT ELECTRICAL COMPONENTS SERVING EXISTING TO BE REMOVED EQUIPMENT SHALL BE DEMOLISHED AND REMOVED TO POINT OF ORIGIN.
3. EXISTING PLUMBING INFRASTRUCTURE FOR BUILDING TO BE DEMOLISHED AND/OR ABANDONED IN PLACE.

DEMOLITION KEY NOTES:

1. EXISTING WATER CLOSET TO BE REMOVED BY PLUMBING CONTRACTOR.
2. EXISTING LAVATORY TO BE REMOVED BY PLUMBING CONTRACTOR.
3. EXISTING WATER HAMMER ARRESTOR AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.
4. EXISTING SHUT OFF VALVE AND ACCESS PANEL TO BE REMOVED BY PLUMBING CONTRACTOR.

CONSTRUCTION NOTES:

1. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.
3. WHERE PLANS INDICATE NEW FIXTURES OR EQUIPMENT CONNECTING TO EXISTING SERVICES, PLUMBING CONTRACTOR SHALL MODIFY AND/OR EXTEND EXISTING PIPING OR ROUGH-INS AS REQUIRED TO SUIT THE NEW FIXTURE.

CONSTRUCTION KEY NOTES:

1. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW WATER CLOSET.
2. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR NEW LAVATORY.
3. CONTRACTOR SHALL ROUGH-IN AND CONNECT TO EXISTING SERVICES FOR WATER HAMMER ARRESTOR AND SHUT OFF VALVE.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-120689 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/15/2022

STUDIO W ARCHITECTS

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Center Drive
Suite 1640
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PDS
PocockDesignSolutions Inc.

ARCHITECT	ENGINEER
	REGISTERED PROFESSIONAL ENGINEER, ANDREW R. GOSSNER, No. 37172, MECHANICAL, STATE OF CALIFORNIA

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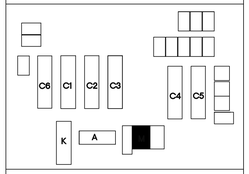
REVISION HISTORY

NO.	REMARKS	DATE

DRAWING STATUS

	DATE
○ DSA SUBMITTAL	12/15/2021
● DSA BACKCHECK	03/04/2022
○ BIDDING	
○ CONSTRUCTION	

KEY PLAN



BUENA PARK
SCHOOL DISTRICT
6885 ORANGETHORPE AVE
BUENA PARK, CA 90620

DSA BACKCHECK

JAMES A. WHITAKER
ELEMENTARY SCHOOL
MULTI-PURPOSE ROOM
ALTERATION
7351 HOLDER STREET
BUENA PARK, CA 90620

PLUMBING DEMOLITION
AND FLOOR PLANS

Date	Project Number
03/04/2022	21030
Scale	Drawing Number
1/8"=1'-0"	P1.1
Drawn NH	Checked PDS

TELACU
CONSTRUCTION MANAGEMENT

Mandatory Job Walk Agenda
Buena Park School District
MPR Modernization Projects

Bid # 14-2022

Job Walk Date: April 4th, 2022 at 9:00 AM PDT
Job Walk Location: Charles G. Emery Elementary School
8600 Somerset Street, Buena Park, CA 90621

Owner: Buena Park School District
Construction Manager: TELACU Construction Management

General Project Information:

Job Walk Sign In: All interested contractors are to sign in and provide contact information on the job walk sign in sheet. Please provide business cards to District Representative. The bid documents and communications for these projects will be sent to the individual listed as the contact as provided at this job walk and posted to the District website. In order to be deemed responsive, bidders must have attended and signed in to the job walk.

Bid Milestones and Schedule:
April 4th, 2022: Mandatory Job Walk 9:00 AM
April 7th, 2021: Last Day for Pre-Bid RFI's
April 11th, 2021: Last Addendum Issued
April 19th, 2022: Bids Due 2:30PM
April 21st, 2022: Contract Award

Bid Opening Location:
Buena Park School District Office
6885 Orangethorpe Avenue
Buena Park, CA 90260

Project Contact:

Karla Reveles
Project Engineer
TELACU Construction Management
714-659-0629
kreveles@telacu.com

Jeff Thomas
Project Manager
TELACU Construction Management
714-315-2299
jthomas@telacu.com

TELACU
CONSTRUCTION MANAGEMENT

Bid Documents: Project Documents are available on the District's web site.
Project Bid Documents consist of:

DSA Approved Project Manual.
Authored by: Studio W Architects.
Dated: 11/01/2021.

DSA Approved Plans dated: 11/01/2021.
APP: 04-120370.
As drawn by: Studio W Architects.

Construction Information:

Bidding Requirements: Class B-1

Project's Preliminary Cost Estimate: The construction cost is anticipated at less than $350,000.00

Project Duration: June 6, 2022 – August 12, 2022

Liquidated Damages: $1,000.00 per Calendar Day

Prevailing Wage: This project will use the Prevailing Wage rates with Certified Payroll Submitted to DIR and copied to TELACU Construction Management.

Contractor Work Hours: All construction and delivery activities shall be restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and from 8:00 a.m. to 5:00 p.m. on Saturdays, or as otherwise modified or amended. Sunday and/or Federal Holidays by request.

Staging: Contractor must coordinate with TELACU Construction Management for staging of materials and deliveries.

Pre-Bid RFIs: Email RFI's no later than **3:00 pm on Thursday April 7, 2022**. Include your Company letterhead and contact information. If RFI is deemed to be valid, a formal response shall be issued as an addendum to all bidding contractors. Final Addendum will be issued on or before **Monday April 11, 2022**.

Bid Alternate:

1. Additive Alternate # 1: SL45 Aluminum Framed Wall by Nanawall
2. Additive Alternate # 2:
3. Additive Alternate # 3:

TELACU
CONSTRUCTION MANAGEMENT

Documents to Be Submitted with Bid: See page 1 of the Instructions to Bidders.

1. Bid Form
2. Bid Bond or other Security
3. Non-Collusion Declaration

Anticipated Addendum Items:

1. Responses to RFI's will be issued on or before Monday April 11th, 2022.

Site General Comments: No smoking or substance use, professional construction attire, no interaction with staff & students. All correspondence and communication to be directed to TELACU Construction Management. Bidders shall not contact the District directly for information related to the project.

General Scope of Work:

1. Completion of project no later than 8/12/22
2. Contractor to provide necessary certificates of insurance naming Buena Park School District and TELACU Construction Management as certificate holders and additional insured.

Additional Notes:

1. District is to provide purchase order for awarded contractor to bill against.
2. Contractor is to provide all necessary State of California legal requirements including but not limited to: bonds, background checks, fingerprinting.
3. Contractor is to be pre-qualified by Buena Park School District.
4. 5% retention to be released upon completion of final "punch walk" list prepared by TELACU Construction Management and Buena Park School District.
5. Contractor to provide breakdown of bid per each elementary school.

TELACU
CONSTRUCTION MANAGEMENT

Mandatory Job Walk Agenda
Buena Park School District
MPR Modernization Projects

Bid # 14-2022

Job Walk Date:	April 4th, 2022 at 10:30 AM PDT
Job Walk Location:	Arthur F. Corey Elementary School 7351 Holder Street, Buena Park, CA 90620
Owner:	Buena Park School District
Construction Manager:	TELACU Construction Management

General Project Information:

Job Walk Sign In: All interested contractors are to sign in and provide contact information on the job walk sign in sheet. Please provide business cards to District Representative. The bid documents and communications for these projects will be sent to the individual listed as the contact as provided at this job walk and posted to the District website. In order to be deemed responsive, bidders must have attended and signed in to the job walk.

Bid Milestones and Schedule:

April 4th, 2022: Mandatory Job Walk 10:30 AM
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April 21, 2022: Contract Award

Bid Opening Location:
Buena Park School District Office
6885 Orangethorpe Avenue
Buena Park, CA 90260

Project Contact:

Karla Reveles	Jeff Thomas
Project Engineer	Project Manager
TELACU Construction Management	TELACU Construction Management
714-659-0629	714-315-2299
kreveles@telacu.com	jthomas@telacu.com

TELACU
CONSTRUCTION MANAGEMENT

Bid Documents: Project Documents are available on the District's web site.
Project Bid Documents consist of:

DSA Approved Project Manual.
Authored by: Studio W Architects.
Dated: 10/27/2021.

DSA Approved Plans dated: 10/27/2021.
APP: 04-120369.
As drawn by: Studio W Architects.

Construction Information:

Bidding Requirements: Class B-1

Project's Preliminary Cost Estimate: The site construction cost is anticipated at less than $300,000.00

Project Duration: June 6, 2022 – August 12, 2022

Liquidated Damages: $1,000.00 per Calendar Day

Prevailing Wage: This project will use the Prevailing Wage rates with Certified Payroll Submitted to DIR and copied to TELACU Construction Management.

Contractor Work Hours: All construction and delivery activities shall be restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and from 8:00 a.m. to 5:00 p.m. on Saturdays, or as otherwise modified or amended. Sunday and/or Federal Holidays by request.

Staging: Contractor must coordinate with TELACU Construction Management for staging of materials and deliveries.

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CONSTRUCTION MANAGEMENT

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5. Contractor to provide breakdown of bid per each elementary school

TELACU
CONSTRUCTION MANAGEMENT

Mandatory Job Walk Agenda
Buena Park School District
MPR Modernization Projects

Bid # 14-2022

Job Walk Date:	April 4th, 2022 at 11:15 AM PDT
Job Walk Location:	Carl E. Gilbert Elementary School 7255 8th Street, Buena Park, CA 90621
Owner:	Buena Park School District
Construction Manager:	TELACU Construction Management

General Project Information:

Job Walk Sign In: All interested contractors are to sign in and provide contact information on the job walk sign in sheet. Please provide business cards to District Representative. The bid documents and communications for these projects will be sent to the individual listed as the contact as provided at this job walk and posted to the District website. In order to be deemed responsive, bidders must have attended and signed in to the job walk.

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Bid Opening Location:
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Buena Park, CA 90260

Project Contact:

Karla Reveles	Jeff Thomas
Project Engineer	Project Manager
TELACU Construction Management	TELACU Construction Management
714-659-0629	714-315-2299
kreveles@telacu.com	jthomas@telacu.com

TELACU
CONSTRUCTION MANAGEMENT

Bid Documents: Project Documents are available on the District's web site.
Project Bid Documents consist of:

DSA Approved Project Manual.
Authored by Studio W Architects.
Dated: 03/11/2022.

DSA Approved Plans dated 03/11/2022.
APP: 04-120688.
As drawn by: Studio W Architects.

Construction Information:

Bidding Requirements: Class B-1

Project's Preliminary Cost Estimate: The site construction cost is anticipated at less than $300,000.00

Project Duration: June 6, 2022 – August 12, 2022

Liquidated Damages: $1,000.00 per Calendar Day

Prevailing Wage: This project will use the Prevailing Wage rates with Certified Payroll Submitted to DIR and copied to TELACU Construction Management.

Contractor Work Hours: All construction and delivery activities shall be restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and from 8:00 a.m. to 5:00 p.m. on Saturdays, or as otherwise modified or amended. Sunday and/or Federal Holidays by request.

Staging: Contractor must coordinate with TELACU Construction Management for staging of materials and deliveries.

Pre-Bid RFIs: Email RFI's no later than **3:00 pm on Thursday April 7, 2022**. Include your Company letterhead and contact information. If RFI is deemed to be valid, a formal response shall be issued as an addendum to all bidding contractors. Final Addendum will be issued on or before **Monday April 11, 2022**.

Bid Alternate:

1. Additive Alternate # 1: SL45 Aluminum Framed Wall by Nanawall
2. Additive Alternate # 2:
3. Additive Alternate # 3:

TELACU
CONSTRUCTION MANAGEMENT

Documents to Be Submitted with Bid: See page 1 of the Instructions to Bidders.

1. Bid Form
2. Bid Bond or other Security
3. Non-Collusion Declaration

Anticipated Addendum Items:

1. Responses to RFI's will be issued on or before Monday April 11th, 2021.

Site General Comments: No smoking or substance use, professional construction attire, no interaction with staff & students. All correspondence and communication to be directed to TELACU Construction Management. Bidders shall not contact the District directly for information related to the project.

General Scope of Work:

1. Completion of project no later than 8/12/22
2. Contractor to provide necessary certificates of insurance naming Buena Park School District and TELACU Construction Management as certificate holders and additional insured.

Additional Notes:

1. District is to provide purchase order for awarded contractor to bill against.
2. Contractor is to provide all necessary State of California legal requirements including but not limited to: bonds, background checks, fingerprinting.
3. Contractor is to be pre-qualified by Buena Park School District.
4. 5% retention to be released upon completion of final "punch walk" list prepared by TELACU Construction Management and Buena Park School District.
5. Contractor to provide breakdown of bid per each Elementary School.

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CONSTRUCTION MANAGEMENT

Mandatory Job Walk Agenda
Buena Park School District
MPR Modernization Projects

Bid # 14-2022

Job Walk Date: April 4th, 2022 at 9:45 AM PDT
Job Walk Location: James A. Whitaker Elementary School
8401 Montana Avenue, Buena Park, CA 90621

Owner: Buena Park School District
Construction Manager: TELACU Construction Management

General Project Information:

Job Walk Sign In: All interested contractors are to sign in and provide contact information on the job walk sign in sheet. Please provide business cards to District Representative. The bid documents and communications for these projects will be sent to the individual listed as the contact as provided at this job walk and posted to the District website. In order to be deemed responsive, bidders must have attended and signed in to the job walk.

Bid Milestones and Schedule:
April 4th, 2022: Mandatory Job Walk 9:45 AM
April 7th, 2021: Last Day for Pre-Bid RFI's
April 11th, 2021: Last Addendum Issued
April 19th, 2022: Bids Due 2:30PM.
April 21st, 2022: Contract Award

Bid Opening Location:
Buena Park School District Office
6885 Orangethorpe Avenue
Buena Park, CA 90260

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CONSTRUCTION MANAGEMENT

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Project Bid Documents consist of:

DSA Approved Project Manual.
Authored by Studio W Architects.
Dated: 03/15/2022.

DSA Approved Plans dated 03/15/2022.
APP: 04-120689.
As drawn by: Studio W Architects.

Construction Information:

Bidding Requirements: Class B-1

Project's Preliminary Cost Estimate: The site construction cost is anticipated at less than $300,000.00

Project Duration: June 6, 2022 – August 12, 2022

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