SACRAMENTO CITY UNIFIED SCHOOL DISTRICT

Sacramento
City Unified
School District

BOOK 1 OF 2

PROJECT MANUAL

Abraham Lincoln ES Phase 1 TK Expansion

5735 47th Avenue
Sacramento, CA 95824
Sacramento County

Bid Package #0097-489

SACRAMENTO CITY UNIFIED SCHOOL DISTRICT, PROCUREMENT SECTION

Submitted to the Sacramento City Unified School District by:

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Section 00 11 13 - NOTICE TO BIDDERS

ARTICLE 1. GENERAL

Section 1.01 Notice is hereby given that the Board of Education of the Sacramento City Unified School District ("District") will receive sealed Bids for

0097-489 Abraham Lincoln ES Phase 1 TK Expansion Project

License required: **A and/or B**
Engineer's Estimate: **$700,000**

Scope of Work including but not limited to: Relocate two (2) portables from Genevieve Didion to Abraham Lincoln; During the Disconnect of the portables at Didion Site, please pull the fiber back and coil it in the closest pull box. All Low Voltage and power to be disconnected, pulled and coiled in a pull box 5'-0" away from the building footprint. All the remaining utilities need to be also disconnected and capped in a new utility box 5'-0" away from the existing building footprint for ease of connection for the next phase on that site. The Existing ramp at the Didion needs to be demolished and not moved to the new site. All internal components for the IDF cabinet are to be moved with the building to the new site. When the two classrooms are moved to Abraham Lincoln Site they may have to be stored on cribs until the building pad is ready. The building pad is a depressed slab and wood foundations. The building comes with the IDF cabinet with all the components for these two classrooms. Reconnect all the low voltage systems such as, data, intercom, intrusion, Fire alarm and connect to existing campus systems and make them operational. Provide new power to these classrooms as shown in the drawings and connect to the closest panel. Connect water and sewer connections on site as needed. We have some fencing modifications with mow curbs as shown in the drawings. Provide venting for depressed foundation area so that the floor finish is flush with new concrete walks as shown in the drawings. Both the new classroom buildings will be painted to match campus colors. All roof downspouts to be connected to underground storm drainage system. Install concrete aprons as shown in the drawings. Replace all damaged classroom ceiling tiles as needs. Both buildings to be completely operational on completion.

The following is the anticipated schedule for bidding and award of the contract for the Project:

Bidding Documents Released	April 27th, 2026
Mandatory Bidder's Conference	May 5, 2026, 2:00 P.M.
Bidder question deadline	May 7, 2026, 2:00 P.M.
Prequalification application deadline	May 3, 2026
Addendum responding to questions	May 12, 2026, 2:00 P.M.
Bids due	**May 15, 2026, 2:00 P.M.**
Good Faith Efforts documentation due	May 16, 2026, 2:00 P.M.
Notice of Intent to Award	May 21, 2026
Board Meeting to Award contract	June 4, 2026
Anticipated Notice to Proceed	June 5, 2026

All general inquiries regarding the bid or issues with the District's Online Bid Platform are to be directed to Darren Sorgea at Dsorgea@Kitchell.com, Ryan Wade at Rwade@Kitchell.com, Robert Aldama at robert-aldama@scusd.edu, Tina Alvarez-Bevens at contracts@scusd.edu,

It shall be the responsibility of each prospective Bidder, upon discovery of any ambiguity or discrepancy in the Notice to Bidders, Instructions to Bidders, Bid Form, specifications, or drawings, to bring such ambiguity or discrepancy to the attention of the District prior to the Bid date and time. Failure to raise any such ambiguity or discrepancy prior to the Bid deadline shall waive the Bidder's right to object to the ambiguity or discrepancy after bidding.

Notice is hereby given that the Project is a public works project within the requirements of Division 2, Part 7, Chapter 1 of the California Labor Code, and that each bidder and listed subcontractor is required to be registered pursuant to Labor Code section 1725.5 at the time of bidding. ***Failure of the bidder to be registered at the time of bidding shall render the bid non-responsive and unavailable for award. Bidder's listing of an unregistered subcontractor may render the bid non-responsive and unavailable for award unless such failure is the result***

of an inadvertent error and the provisions of Labor Code section 1771.1 apply.

The plans and specifications may be obtained from the District's Website (https://www.scusd.edu/departments/business-and-operations/contracts-department/construction-project-bids) and the District's Online Bid Platform (https://gateway.app.e-builder.net/app/bidders/landing?accountid=aaf85f30-eade-4a97-af1d-5076c07d8a32&projectid=36bbe3f3-7a18-48da-af04-a620f6770e84&bidpackageid=cbdd89bf-9a94-47ea-8b4a-b17372b5cf37).

Notice is hereby given that the Project is subject to the requirements of Public Contract Code section 20111.6 as a project funded under the Leroy F. Greene School Facilities Act of 1998 or a project that involves a projected expenditure of one million dollars ($1,000,000) or more and is funded from a state school bond. As such, the District will accept Bids only from prequalified Bidders. In addition, all mechanical, electrical and plumbing ("MEP") subcontractors (as defined by Public Contract Code section 20111.6(k)) must be prequalified prior to the Bid due

date. MEP subcontractors subject to these requirements are those with any of the following license classifications: C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43 and C-46.

The District's Prequalification Application is done on-line. The direct link to the on-line application is https://www.scusd.edu/departments/business-and-operations/contracts-department/contractor-prequalification.. Bidders and MEP subcontractors must have submitted their on-line applications no later than ten (10) business days before the due date for Bids or have been prequalified for at least five (5) business days before the due date for Bids. Bids will not be accepted from any Bidder who has not complied with these requirements.

Every Bid shall set forth information on subcontractors required by Public Contract Code sections 4100 to 4114, inclusive. Failure to list a subcontractor for a portion of work, if required, is a representation that the Bidder will perform that portion of work itself.

The Project includes a goal that each Bidder commit to provide at least three percent (3%) of the work to one or more Disabled Veteran Business Enterprises ("DVBE") certified by the California Department of General Services. [**If a Bidder does not achieve at least the 3% DVBE goal, then the Bidder must establish Good Faith Efforts ("GFE") to have met the goal**, as addressed more fully in Instructions to Bidders, in order to be eligible for contract award.]

Bids are due:

BID INFORMATION

Location:	5735 47th Avenue, Sacramento, CA 95824
Contact:	Tina Alvarez-Bevens
Date:	**May 15, 2026**
Bids Due:	**2:00 P.M.**

At this time such Bids will be opened and publicly read. Untimely Bids will not be accepted or opened.

If Bidders choose to submit GFE documentation, that documentation is due:

GOOD FAITH EFFORTS DOCUMENTATION

Location:	5735 47th Avenue, Sacramento, CA 95824
Contact:	Tina Alvarez-Bevens
Date:	**May 16, 2026**
Bids Due:	**2:00 P.M.**

Documentation received after that time will not be considered to determine whether a Bidder made GFE to meet the DVBE goal.

Section 1.02 A **mandatory** pre-bid conference will be held at:

MANDATORY PRE-BID CONFERENCE INFORMATION

Location:	Abraham Lincoln Elementary: 3324 Glenmoor Drive, Sacramento, CA 95827
Contact:	Tina Alvarez-Bevens
Date:	**May 5, 2026**
Time:	**2:00 P.M.**

Bidders will be required to sign-in to verify attendance. The pre-bid conference will include an in-person site walk to familiarize Bidders with existing site conditions.

Attendance for duration of meeting at the site, including the site walk, is mandatory and each prime contract bidder ("Bidder" or "Bidders") shall be required to certify, as part of its Bid, that it attended the entirety of the Pre-Bid conference. Failure to attend the entirety of the pre-bid conference or to include the certification will render the bid non-responsive. For all Pre-Bid visits (other than the Pre-bid conference), Bidder must make an appointment with the Construction Manager prior to visiting the Site.

Section1.03 The District's forms shall be used for all Bid documents. Bidders shall read and review the Bidding Documents carefully, and shall familiarize themselves thoroughly with all requirements. To be responsive, a Bid must conform to the requirements of the Bidding Documents.

Section 1.04 No Bid will be considered unless it is accompanied by Cashier's Check, Certified Check, or Bid Bond from a surety authorized to do business in California for ten percent (10%) of the total amount of the Bid, including additive Alternate Bids (if any), made payable to the District. The above-mentioned check or bid bond shall be given as a guarantee that the Bidder shall, if selected by the District, execute the Contract, in conformance with the Contract Documents.

Section 1.05 Bids shall not expire for a period of 90 days after the date set for the bid opening. Within ten (10) days after notification of the District's Notice of Intent to Award the Contract, the successful Bidder will be required to furnish a Labor and Material (Payment) Bond, and a Performance Bond in substantially the form set forth in the Construction Forms Manual, proof of insurance (if required), and all other documents and information specified in the Notice of Intent to Award.

Section 1.06 The District is an equal opportunity employer. The Bidder shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, gender, national origin, or other class protected by Government Code section 12940(a). The District encourages the participation of DVBE businesses.

Section 1.07 The successful Bidder shall be required to pay its workers on this Project a sum not less than the general prevailing rate (applicable at time of bid advertisement date) of per diem wages and not less than the general prevailing rate for holiday and overtime work for work of a similar character in the locality in which the Project is performed, as provided under California Labor Code Sections 1726-1861. Copies of the prevailing rate of per diem wages may be obtained at https://www.dir.ca.gov/OPRL/DPreWageDetermination.htm. The Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Section 1.08 The District reserves the right to reject any and all Bids and to waive any irregularity in any Bids received.

Section 1.09 At the request and expense of the successful Bidder, eligible securities shall be accepted in lieu of retention payments to insure performance under the Contract, pursuant to California Public Contract Code Section 22300. Said securities shall be deposited prior to the submission of the successful Bidder's first progress payment application.

Section 1.10 The District participates in all available rebate programs. The successful Bidder agrees to notify the District of any available rebate of which the successful Bidder is aware, and to provide the District with invoices and all other documentation necessary to claim any available rebate. The District will apply for available rebates, and the rebates will be paid directly to the District, not the successful Bidder.

Section 1.11 The selected contractor shall be required to complete any and all fingerprinting requirements and criminal background checks required by State law and shall also be required to complete a Drug-Free workplace certificate.

Section 1.12 NOT USED

Section 1.13 The District has entered into a Project Labor Agreement that may be applicable to this Project. A copy of the Project Labor Agreement is available for review at the District Facilities Office and may be downloaded from the District's website, www.scusd.edu, using the https://www.scusd.edu/pod/project-labor-agreement link. The successful bidder and all subcontractors will be required to agree to be bound by the Project Labor Agreement, if applicable.

END OF SECTION

Section 00 21 13 - INSTRUCTIONS TO BIDDERS

Section 1.01 Project Team

The Project Team consists of the following:

The District:	Sacramento City Unified School District
The District Representative:	Facilities Support Services
The Project:	0097-489 Abrahem Lincoln ES Phase 1 TK Expansion Project
The Project Address:	3324 Glenmoor Dr, Sacramento, CA 95827

Section 1.02 Bidding Documents

The "Bidding Documents" include the Notice to Bidders, Instructions to Bidders, Proposal Forms, Subcontractor Listing Form, Non-collusion Declaration, Iran Contracting Act Certification, Certification Regarding Russian Sanctions, Post Bid Interview, Agreement for Construction, Bid Security, Performance and Labor & Material (Payment) Bond Forms, the General Conditions, the Special Provisions, the General Requirements, Exhibits, the Technical Specifications, the Contract Drawings and Plans, the Hazardous Materials Requirements (if applicable), Addenda, and the Construction Forms Manual.

A. Bidders shall use complete sets of Bidding Documents in preparing Bids. Bidders are responsible for ascertaining that the Bidding Documents upon which their Bids are based are complete sets. Failure to fully complete and submit all pages of the Bid Form and Bidding Documents required at the time of the Bid may result in the Bid being rejected as non-responsive.

B. Bidding Documents are provided to Bidders for bidding only. No other use is permitted.

C. Should a Bidder find discrepancies, ambiguities, inconsistencies, errors or omissions in the Bidding Documents, Contract Documents and/or applicable Federal, State, and local regulations or requirements, and/or should Bidder have any doubt about the meaning of any of the Contract Documents, the Bidder shall submit questions to Ryan Wade at Rwade@Kitchell.com, Darren Sorgea at Dsorgea@Kitchell.com, Robert Aldama at robert-aldama@scusd.edu, Tina Alvarez-Bevens at contracts@scusd.edu . Bidder's questions shall be submitted no later than **May 7, 2026; 2:00 P.M.**

D. The District will post to the District Online Bid Platform (all registered bidders will receive notification) and District website all clarifications in the form of Addenda (https://gateway.app.e-builder.net/app/bidders/landing?accountid=aaf85f30-eade-4a97-af1d-5076c07d8a32&projectid=36bbe3f3-7a18-48da-af04-a620f6770e84&bidpackageid=cbdd89bf-9a94-47ea-8b4a-b17372b5cf37.

E. Each Bidder shall ascertain, prior to submitting a Bid, that every Addendum issued prior to the Bid Date has been considered, and shall acknowledge receipt of each Addendum on the Bid form. Each Addendum will become a part of the Contract for Construction.

F. After issuance of the Bid Documents and except as expressly provided, communication with the District regarding the substance of the Bid Documents or Project outside of the Pre-Bid Conference, including without limitation communication with District employees or any Board member, is prohibited until a Notice of Intent to Award is issued. Notwithstanding the foregoing, potential Bidder may direct general questions related to the Bid to: Darren Sorgea at Dsorgea@Kitchell.com, Ryan Wade at Rwade@Kitchell.com, Robert Aldama at robert-aldama@scusd.edu, Tina Alvarez-Bevens at contracts@scusd.edu, .

Section 1.03 Safety Requirements

In order to be eligible for award, Bidders must have an average Workers' Compensation Experience Modification Rate (EMR) of 1.25 or less over the last five (5) years OR the current published year. In addition, Bidders must have no

"serious" and "willful" violations of Labor Code sections 6300 *et seq.* in the past five (5) years. As a condition of award, the selected Bidder will be required to provide its Injury and Illness Prevention Program.

Section 1.04 Bid Security

A. Each Bid shall be accompanied by Bid Security, pledging that the Bidder will enter into a contract with the District in accordance with the terms stated in the proposal, and will furnish required payment and performance bonds. The Bid Security will be returned to Bidders within ten (10) days after the successful Bidder has executed and returned the contract for the Project. Should any Bidder awarded a contract fail or refuse to enter into such a contract or fail to furnish required bonds, the Bid Security shall be used to compensate the District for added costs associated with awarding the contract to another Bidder, including any costs of rebidding the Project if the District elects to rebid.

B. Bid Security shall be in the amount of ten percent (10%) of the total Bid(s), including additive Alternate Bids.

C. Bid Security shall be in the form of a Bid Bond from a surety company authorized to do business in California, Cashier's Check or a Certified Check, or Cash. The District shall be listed as obligee on the bond or payee on the check.

D. If a Bid Bond is submitted, the attorney-in-fact who executes the bond on behalf of the Surety shall attach to the Bond a certified, current copy of its Power of Attorney. The bid bond form supplied by the Surety is adequate

Section 1.05 Subcontractor Listing

Pursuant to the Subletting and Subcontracting Fair Practices Act, Sections 4100 to 4114, inclusive, of the California Public Contract Code, every Bidder shall in its bid set forth:

A. The name, contractor license number, DIR registration number, and location of the place of business of each subcontractor that will perform work valued at more than one-half of one percent (0.5%) of the Bidder's total Bid. Only subcontractors required to be listed by Public Contract Code section 4104 are required to be listed.

B. The portion of the Work that will be done by each Subcontractor, including for additive Alternate Bids. If the Bidder fails to specify a Subcontractor for any portion of the Work to be performed under the Contract in excess of one-half of one percent (0.5%) of the Bidder's total Bid, including additive Alternate Bids, the Bidder agrees that it is fully qualified to perform that portion itself, and that the Bidder shall perform that portion itself. The successful Bidder shall not, without the written consent of the District, either:

1. Substitute any person as Subcontractor in place of the Subcontractor designated in the original bid.
2. Permit any subcontract to be assigned or transferred or allow it to be performed by anyone other than the original Subcontractor listed in the bid. This requirement shall not prohibit a listed subcontractor from further subcontracting a portion of its work, so long as such subcontracting is otherwise permitted by law.
3. Sublet or subcontract any portion of the Work in excess of one-half of one percent (0.5%) of the total Bid, including additive Alternate Bids, as to which its original Bid did not designate a Subcontractor.

In addition, **Bidders shall list all Disabled Veteran Business Enterprises ("DVBE") for which the Bidder seeks credit**, even if the DVBE is not otherwise required to be listed by the Subletting and Subcontracting Fair Practices Act. If the DVBE is a lower tier subcontractor, the Bidder must identify the first tier subcontractor under which the DVBE will be performing its scope of work to avoid listing two subcontractors for the same portion of work.

Any subcontractor listed in accordance with Public Contract Code section 4104 shall be registered pursuant to Labor Code section 1725.5 at the time of bidding.

The District has entered into a Project Labor Agreement that is applicable to this Project. A copy of the Project Labor Agreement is available for review at the District Facilities Office and may be downloaded from the District's website,

www.scusd.ed, using the https://www.scusd.edu/pod/project-labor-agreement link. The successful bidder and all subcontractors will be required to agree to be bound by the Project Labor Agreement.

Section 1.06 Bid Submittal

Bids shall be submitted at the SCUSD Serna Center, 5735 47th Avenue, Sacramento, California 95824. Bids not received by the deadline will not be considered. Please be advised that there may be a heavy demand at the deadline for submitting Bids, and the District assumes no responsibility if the Bidder is unable to timely complete submission of its Bid. Bids will not be opened or reviewed until the Bid deadline.

By submitting a Bid, each Bidder certifies that:

A. The Bidder has read and understands the Bidding Documents,

B. The Bid is made in accordance with the Bidding Documents,

C. The Bidder has visited the project site and is familiar with the local conditions under which the work will be performed. The Bidder acknowledges that failure to visit the site will not relieve the Bidder of the responsibility for observing and considering those conditions which a contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the work or proceeding to perform the work without additional cost to the District.

D. The Bidder agrees that the plans, specifications, and reports are adequate to the best of the Bidder's knowledge and that the work can be performed for the amount bid in strict accordance with the terms of the Contract Documents.

E. Bidder has attended the full duration of the mandatory Pre-Bid Conference.

Section 1.07 Bid Opening and Contract Awards

A. Bids will be opened publicly and read aloud at the time and date established in the Notice to Bidders. Bid Summaries may be made available to Bidders not sooner than 72 hours after the Bid Date.

B. Contract award, if any, will be to the lowest responsive, responsible Bidder. If the Bidding Documents include Bid Alternates, the lowest Bid will be determined based on any combination of Base Bid and Alternates as determined by the District. This process is conducted by the District in a "blind selection" format, i.e., without knowledge of the identity of any of the Bidders before ranking of all Bidders from lowest to highest has been determined. All awards will be made in the District's best interest. No award will be made to a Bidder which is not pre-qualified if pre-qualification is required, and no award will be made to a Bidder that is not registered in accordance with Labor Code section 1725.5.

C. The District reserves the right to waive any informality or irregularity in any Bid.

D. The District reserves the right to reject any and all Bids.

E. If the District elects to award the Contract, then the District will issue a Notice of Intent to Award to the successful Bidder and post the notice on its website and Online Bid Platform. The Notice will require the selected Bidder to submit specified documents to the District prior to the Board meeting at which award will be considered.

Section 1.08 Bid Protests

A. Any Bidder may file a protest against the award of the Contract to any other Bidder. The protest must be in writing, filed within five (5) calendar days after the posting of the Notice of Intent to Award the contract, and must set forth all factual and legal grounds for the protest. These requirements are to be strictly construed. Untimely protests and/or grounds not set forth in the protest will not be considered. Further, the failure to

comply with these protest requirements will constitute a waiver of the right to challenge and forever bar the Bidder from challenging, whether before the District or any administrative or judicial tribunal, any particular Bid(s), the bidding process, or any ground not set forth in the protest.

B. The District will provide a written response to any timely bid protest.

Section 1.09 Post-Bid Interviews

A. Bidders in contention for contract awards may be asked to attend a Post-Bid interview and submit Post-Bid submittals in rough draft form for review.

Section 1.10 Post-Bid Submittals

The successful Bidder shall submit all required Post-Bid documents by the date identified in the Notice of Intent to Award. The Post-Bid documents include:

1. Payment Bond
2. Performance Bond
3. Local contact for Surety
4. Insurance Certificates
5. Agreement: To be executed by successful Bidder. Submit one (1) original, hard copy, each bearing an original signature. Agreements can also be electronically sent to contracts@scusd.edu.
6. Criminal Background Investigation/Fingerprinting Certification.
7. Worker's Compensation Certification
8. Prevailing Wage and Related Labor Requirements Certification.
9. Drug-Free Workplace Certification.
10. Tobacco-Free Environment Certification.
11. Hazardous Materials Certification.
12. Lead-Based Materials Certification.
13. Imported Materials Certification.
14. Disabled Veteran Business Enterprise Participation Certification.
15. List of all Subcontractors and suppliers with their contractor license numbers, contractor registration number (DIR), addresses, telephone and fax numbers (2 copies required)
16. Name of the full-time superintendent
17. Emergency contact names and numbers
18. The name of the safety supervisor
19. Copy of Safety Manual (Illness and Injury Prevention Program)
20. Name of the person(s) authorized to sign documents for this project
21. Resume for full time superintendent
22. W9
23. Escrow Agreement in Lieu of Retention (Contractor's Option)

The contract will not be submitted to the District's Board for approval and award until all required pre-award documents are received. If the intended awardee fails to submit the required documents in the time specified, the District may reject its Bid and award to the next lowest responsive, responsible Bidder.

END OF SECTION

Section 00 21 16 - BID FORM INSTRUCTIONS

ARTICLE 1. INSTRUCTIONS

Section 1.01 Bid Forms

Bidders are required to use the Bid Form provided.

The “Bid” stated in the Bid Form is the total amount for which the Bidder proposes to perform the Work.

Where bid Alternates are required, “Base Bid” is the total amount stated on the Bid Form for which the Bidder offers to perform Work that necessarily is part of any contract awarded, and from which “Alternates” may be added or deleted at the District’s discretion. The “Total Base Bid Amount” stated on the Bid Form is the total of the Base Bid plus the required allowances, if any. Where the Bid Form requests unit prices, “Unit Prices” are amounts bid by unit measure of materials and/or services, as required in the Bidding Documents; amounts paid under a contract will be based on actual units multiplied by the unit price. Estimated units stated in the Bid Form are for evaluation purposes only, and are not a guarantee of any specific amount of units of work.

Section 1.02 Bids

A. A responsive Bid must include all of the following:

1. Completion of all sheets of the Bid Form, Section 00 42 00, as required
2. Bid Security (see Section 00 21 13, Article 1.06)

B. Bids shall be submitted at the SCUSD Serna Center, 5735 47th Avenue, Sacramento, California 95824

C. All spaces provided on the Bid Forms shall be filled in. If any space provided is not utilized by the Bidder, that space shall be filled in with the notation "NA" (Not Applicable).

D. Complete Bid Forms legibly, preferably by typewriter or computer. At the District’s discretion, if any bid amount on the Bid Form is not legible, the District may reject the Bid as uncertain and unavailable for award.

E. Where indicated, all amounts shall be expressed in words and in figures. In case of discrepancy, the words shall govern. In the case of a discrepancy between the Total Bid Amount stated on the Bid Form and the actual total, the actual mathematical total will govern. In the case of a discrepancy between a Unit Price and an extended price, the unit price shall govern. Failure to list a Unit Price or lump sum price for a type of work where indicated shall be understood to be a unit price/lump sum price of $0.

F. Bidders shall not make unsolicited notations or statements on the Bid Forms. If the District determines that any notation indicates a conditional Bid, the Bid shall be rejected as being non-responsive.

G. All changes to and erasures or crossing out of the Bidder's entries shall be initialed by the signer of the Bid.

H. Each Bid shall include the legal name of the Bidder and a statement regarding whether the Bidder is a sole proprietor, a partnership, a corporation, a limited liability company, or other type of legal entity. Bids submitted by corporations shall have the state of incorporation noted. Any Bid submitted by an agent shall have a current Power of Attorney attached, certifying the agent's power to bind the Bidder.

I. If the Bid Form includes Bid Alternates, all requested Alternates shall be bid or the Bid will be incomplete and non-responsive.

Section 1.03 Completion of Bid Form

A. Submit only one Bid Form for each Bid Package.

B. List Contractor's License number, contractor registration number (DIR), and expiration dates of both. Sign and date this section in the space provided.

C. Fill in the numbers and dates of all Addenda received and considered in the Proposal. Bids must include acknowledgment of all Addenda issued prior to the Bid Date. Failure to acknowledge any Addendum containing substantive information about, or changes to, the Bidding Documents shall make the Bid non-responsive and unavailable for award.

D. Fill in the amount of Bid Alternates, as applicable.

E. Fill out and sign the Non-Collusion Declaration, Iran Contracting Act certification (if applicable), Certification Regarding Russian Sanctions, and Site Visit Certification.

F. Fill in Subcontractors list, **including all DVBEs for which the Bidder claims credit**; if there will not be any Subcontractors, check the appropriate blank. State whether the DVBE goal was met [or good faith efforts documentation will be submitted.

G. Type or print the signer's name and title in the spaces provided below the signature.

H. Date the form in the spaces provided.

I. Sign in the spaces provided.

Section 1.04 Submission of Bids

A. Bids shall be submitted at the SCUSD Serna Center, 5735 47th Avenue, Sacramento, California 95824.

B. Bids shall be submitted by the time and date stated in the Notice to Bidders. Late Bids will not be accepted.

C. If the DVBE participation goal is not met, submit documentation of DVBE Good Faith Efforts (“GFE”) **within 24 hours after the proposal deadline**. Bidders are encouraged to submit GFE documentation even if they believe they have met the DVBE goal in the event there is a problem with a listed DVBE. Late GFE documentation will not be accepted and will result in any Bid that fails to meet the DVBE goal being rejected as non-responsive.

D. Bidders shall bear full responsibility for ensuring that Bids are received by the time and date designated for receipt of Bids. There may be a heavy demand at the deadline for submitting Bids, and the District assumes no responsibility if the Bidder is unable to complete the submission of its Bid by the deadline.

E. No telephones, fax machines, scanners, or computers will be provided by the District or the District Representative.

Section 1.07 Modification or Withdrawal of Bids

A. A Bid may not be withdrawn by the Bidder following the time and date designated for the receipt of Bids, except in accordance with Sections 5100 - 5108 of the Public Contract Code.

B. Prior to the time and date designated for receipt of Bids, Bids may be withdrawn and a revised Bid may be submitted before the Bid deadline. Withdrawals shall be through the Online Bid Platform. Telephone, fax, and email withdrawals will not be accepted.

C. Withdrawn Bids may be resubmitted up to the time and date designated for receipt of Bids.

END OF SECTION

Section 00 42 00 - BID FORM

PROPOSAL FOR: Sacramento City Unified School District

TO: Sacramento City Unified School District
5735 47th Avenue, Sacramento, California 95824

COVERING BID PACKAGE: **0097-489 Abrahem Lincoln ES Phase 1 TK Expansion Project**

SUBMITTED BY: _____
Name of Bidder

_____
Address

_____
Phone #/Fax #:

License number: _____. License type: ____. License expiration date: _____.

Public Works Contractor DIR Registration #_____ Expiration date: _____

Average EMR (past 5 years): _____ Total "serious" and "willful" OSHA violations (past 5 years): ___

Bidder:

On behalf of Bidder, the undersigned represents that Bidder's authorized representative attended the full duration of the Pre-Bid Conference, and that Bidder has carefully examined the Site, the proposed Contract Documents consisting of the Notice to Bidders, the Instructions for Bidders, the Proposal Form, the Agreement for Construction, the Bid Bond, the Performance Bond, the Payment Bond, the General Conditions, the Special Provisions, the General Requirements, Exhibits, the Technical Specifications, the Contract Drawings and Plans, any and all Addenda prepared by the Architect pertinent to the construction of the above-referenced Project, the Contractor's Guarantee and Bond, the Hazardous Materials Requirements (if any), and the Construction Forms Manual, and further, being reasonably familiar with all other conditions affecting the Work, Bidder hereby proposes and agrees to furnish and provide all labor, materials, supervision, transportation, tools, equipment, services and other facilities necessary and required for the expeditious completion of the Work included in the Bid Package indicated above, in strict conformity with said conditions and Contract Documents. Bidder agrees to comply with all requirements of the Project Labor Agreement.

Bidder has reviewed the Work outlined in the Bid Package and fully understands the Scope of Work encompassed by this Bid, and acknowledges that its Bid includes the Work of all trades within the Bid Package covered in the Bid and understands that, if awarded the Contract, Bidder shall be the Prime Contractor to the District and agrees that its Bid, if accepted by the District, will be the basis for a contract with the District in accordance with the intent of the Contract Documents.

Bidder agrees to complete the Work required within the Bid Package within the time indicated in the Special Provisions, subject to liquidated damages as specified in the Special Provisions.

The undersigned has the authority to so bind Bidder to these representations and agreements.

_____ _____ ***Affix Corporate Seal Here***
Signed Date

_____
Print Name

_____
Title

Enclosed is a certified check, cashier's check, or bid bond for ten percent (10%) of the amount of the Base Bid including additive Alternates (if any), made payable to the District to be left in escrow with the District as a guarantee that Bidder will enter into a contract and will furnish specified insurance and bonds. It is understood that refusal to do so will result in the forfeit of this guarantee. If this Bid is not accepted within the time set for acceptance of bids, or any extension thereof, or if the contract is fully executed with another Bidder, or if the District elects not to award a contract, then the check or bid bond shall be returned to the Bidder.

Bidder has notified the District of any discrepancies, ambiguities, inconsistencies, errors or omissions in the Bidding Documents, Contract Documents, applicable Federal, State, and local regulations or requirements, and/or of any doubt about the meaning of any of the Contract Documents, and has contacted the District before bid date to verify the issuing of any clarifying Addenda.

The undersigned further acknowledges receipt of the following Addenda, which are a part of the Contract Documents:

NO.____ DATE_____ NO.____ DATE_____
NO.____ DATE_____ NO.____ DATE_____ ***(Include All Addenda)***
NO.____ DATE_____ NO.____ DATE_____
NO.____ DATE_____ NO.____ DATE_____

_____
Signed

_____
Print Name

_____
Title

BID PACKAGE: 0097-489 Abrahem Lincoln ES Phase 1 Expansion Project

1. TOTAL BID

Lump Sum (in words) _____

_____**Dollars**

Lump Sum (in figures) **$**_____

2. DSA and Unforeseen Allowance **$250,000**

TOTAL BASE BID equals sum of Items 1 through 2 above. The undersigned proposes to provide and construct the Work required for the above listed Bid Package in accordance with said Contract Documents for the amount of:

TOTAL BASE BID (in words): _____

_____**DOLLARS**

TOTAL BASE BID (in figures): **$**_____

_____
Signed (Signature of Bidder)

_____
Name of Firm

AGREEMENT

It is understood and agreed that if written notice of the District's acceptance of this Bid is mailed, emailed, or otherwise delivered to the undersigned Bidder after the opening of the Bid, and within the time in which the District may accept the Bid, the undersigned Bidder will execute and deliver to the District a contract in the form included with the Bidding Documents within ten (10) days after receipt of the Notice of Intent to Award or other notification of award, and that the Work under the Contract shall be commenced by the undersigned Bidder, if awarded the Contract, on the date to be stated in a Notice to Proceed and shall be completed in the time specified in the Contract Documents. In the event the Bidder to whom an award is made fails or refuses to timely execute the Contract, the District may declare the Bidder's bid security forfeited.

Enclosed herewith is a listing of Subcontractors and major materials suppliers in accordance with Sections 4100 to 4114 of the California Public Contract Code and the Instructions to Bidders and a listing of Disabled Veteran Business Enterprises, including any DVBE acting as a material supplier, lower tier subcontractor, or other entity not required to be listed by the Subletting and Subcontracting Fair Practices Act.

Also enclosed herewith are the Non-Collusion Affidavit, Iran Contracting Act certification, and Certification regarding Russian Sanctions, as required by law. Site Visit Certification shall also be enclosed herewith if pre-bid site visit was mandatory.

The undersigned Bidder agrees that the information and representations provided herein are made under penalty of perjury.

NOTE: If Bidder is a corporation, the legal name of the corporation shall be set forth below, together with the signatures of authorized officers or agents, who shall be either a) the president or b) any vice president and the secretary, any assistant secretary, the chief financial officer, or any assistant treasurer. If Bidder is a partnership or limited liability company, the true name of the firm shall be set forth below together with the signature of a partner or member authorized to sign contracts on behalf of the partnership or LLC. If Bidder is an individual, his/her signature shall be placed below.

NAME OF BIDDER:

_____

BY: _____ _____
Signature Title

_____
Type/Print Name

_____ _____
Signature Title

_____
Type/Print Name

_____ _____
Signature Title

_____
Type/Print Name

DATE: _____

NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF _____)
) ss.
County of _____)

I, _____, declare that I am _____ of _____ the party making the foregoing bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and 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; that 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 its 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], California..

_____ _____
Signature of Bidder Date

_____
Print Name

IRAN CONTRACTING ACT CERTIFICATION FORM

Pursuant to California Public Contract Code (PCC) section 2204, an Iran Contracting Act certification is required for solicitations of goods or services of $1,000,000 or more.

To submit a proposal to the District, you must complete ONLY ONE of the following two paragraphs. To complete paragraph 1, check the corresponding box and complete the certification for paragraph 1. To complete paragraph 2, simply check the corresponding box.

☐ 1. We are not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to PCC 2203(b), and we are not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

OR

☐ 2. We have received written permission from the District to submit a proposal pursuant to PCC 2203(c) or (d). A copy of the written permission from the District is included with our Bid.

CERTIFICATION FOR PARAGRAPH 1:

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY, that I am duly authorized to legally bind the Bidder to the clause in paragraph 1. This certification is made under the laws of the State of California.

Company Name (Printed) Click here to enter text.	*Federal ID Number* Click here to enter text.
By (Authorized Signature)	
Printed Name and Title of Person Signing Click here to enter text.	
Date Executed Click here to enter text.	*Executed in the County of _____ in the State of _____*

CERFIFICATION REGARDING RUSSIAN SANCTIONS

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 regarding Economic Sanctions against Russia and Russian entities and individuals. “Economic Sanctions” hereunder refers to sanctions imposed by the United States government in response to Russia’s actions in Ukraine, as those sanctions may be updated from time to time, as well as any sanctions imposed under state law. By its signature below, the Respondent represents that it is not a target of Economic Sanctions.

Should the District determine that the Respondent is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities, that shall be grounds for rejection of the Respondent’s Proposal **for lack of responsibility** any time prior to contract execution, or, if determined after contract execution, shall be grounds for termination for default by the District. The Contractor will be required to obtain a similar certification from all proposed trade contractors subject to the protections of Public Contract Code section 4100 *et seq.;* failure to obtain such certification and/or a determination that any such proposed subcontractor is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities will be grounds for rejection of the proposed subcontractor.

I, the official named below, declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this certification is executed on _____ at _____, California.

[Date] [City]

RESPONDENT: _____

BY: _____

Signature

_____

Type/Print Name

_____

Title

SITE VISIT CERTIFICATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID
IF SITE VISIT WAS MANDATORY

Check option that applies:

_____ I certify that I visited the Site of the proposed Work, received the attached _____ pages of information, and became fully acquainted with the conditions relating to construction and labor. I fully understand the facilities, difficulties, and restrictions attending the execution of the Work under contract.

_____ I certify that _____ (Bidder's representative) visited the Site of the proposed Work, received the attached _____ pages of information, and became fully acquainted with the conditions relating to construction and labor. The Bidder's representative fully understood the facilities, difficulties, and restrictions attending the execution of the Work under contract.

Bidder fully indemnifies the Sacramento City Unified School District, its Architect, its Engineers, its Construction Manager, and all of their respective officers, agents, employees, and consultants from any damage, or omissions, related to conditions that could have been identified during my visit and/or the Bidder's representative's visit to the Site.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

ATTACHMENTS:

1.

2.

3.

INSTRUCTIONS TO SUBCONTRACTOR AND DVBE LISTING FORM

1. Insert Bidder's name where indicated. Note: Bidder's name is to be inserted below the table on the second page as well as at the top of the first page.

2. Check next to either the Bidder is not using any Subcontractors/DVBEs OR all Subcontractors required to be listed and DVBEs for which credit is claimed have been listed.

3. For each listed entity, identify the portion of work to be performed by the subcontractor/DVBE. Where not all work will be performed by a single subcontractor, Bidder may designate "partial" and further define the portion of the work to be performed. The "portion" of work must specify which subcontractor will be responsible for applicable mechanical, electrical, and plumbing (MEP) work, even if that work will be further subcontracted to a lower-tier subcontractor. **If any first-tier subcontractor identified for MEP work is not prequalified, then the bidder must identify the prequalified lower-tier subcontractor who will perform the work**; failure to do so will result in the bid being deemed non-responsive. If the portion of work does not identify one or more MEP subcontractors, if required for the work, then the prime contractor must perform that work with its own forces.

4. **All DVBEs** for which the Bidder is claiming credit must be listed on the form and identified as DVBEs, even if the work to be performed is less than one-half of one percent (0.5%) of the bid amount, involves supply of materials, or is to be performed by a lower-tier subcontractor. ***Note:*** Equipment Brokers, as defined in the DVBE Requirements, are not eligible for credit towards the DVBE participation goal.

5. In the column for "portion of work," if the listed entity is a DVBE, state **both** a description of the portion of work **and** a dollar amount. Subcontractors that are not DVBEs are not required to, but may, include a dollar amount of work. For DVBE entities that will not be contracting directly with Bidder (second tier or lower subcontractors), identify the subcontractor with which the DVBE will be contracting.

6. For each listed entity, fill in its name, license number and DIR registration number, and location of the place of business. For all DVBEs, also include the DVBE certification number assigned by the California Department of General Services.

7. For each listed entity, indicate either Y (yes) or N (no) in the column to specify whether the listed entity is a certified DVBE.

8. Ensure that Bidder's name is inserted where indicated. Mark the box for **either** the Bidder is a DVBE, **or** the Bidder will meet the DVBE goal with the listed DVBEs, **or** the Bidder has not met the goal. If the Bidder has not met the goal, state the percentage of DVBE participation achieved.

9. Sign the form where indicated.

10. Additional pages may be copied if necessary. Signature is only required once.

LIST OF SUBCONTRACTORS FOR _____ (BIDDER)

PROJECT: **0097-489 Abraham Lincoln ES Phase 1 TK Expansion Project**

Pursuant to the provisions of Sections 4100 to 4114 inclusive, of the California Public Contract Code, and as set forth in Instructions to Bidders, and the General Conditions, the above named Contractor hereby designates below the portion of work to be performed by each Subcontractor and DVBE and the names, contractor license numbers, DIR registration numbers, and locations of the place of business of each Subcontractor and DVBE. Listed subcontractors shall be entitled to the protections of Public Contract Code sections 4100 to 4114. Please check one of the boxes and sign below:

☐ We are not using any Subcontractors or DVBEs.

☐ All of our Subcontractors who are performing at least 1/2 of 1% of the Work, including for any additive Alternates, **and** any DVBEs for which the Bidder claims credit, are listed below.

PORTION OF WORK TO BE PERFORMED (1)	NAME OF SUBCONTRACTOR	LICENSE, DIR AND DVBE NUMBERS	DVBE [Y/N]	LOCATION OF PLACE OF BUSINESS
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		

PORTION OF WORK TO BE PERFORMED (1)	NAME OF SUBCONTRACTOR	LICENSE, DIR AND DVBE NUMBERS	DVBE [Y/N]	LOCATION OF PLACE OF BUSINESS
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		
		CSLB: DIR: DVBE #:		

_____ (Insert Bidder name):

☐ Is a certified DVBE.

☐ Will meet the stated DVBE participation goal and has listed all DVBEs above.

☐ Has not met the goal but will achieve ___ % DVBE participation based on the DVBEs listed above.

By the signature below, the Bidder certifies under penalty of perjury under the laws of the State of California that, in performing the portion of work identified above, each listed DVBE shall perform a commercially useful function, as defined in Military & Veterans Code section 999(b)(5)(B)(i).

_____

Signed

(1) For DVBE subcontractors or suppliers, the work must be identified by description and a dollar amount. For second tier or lower subcontractors, identify the subcontractor with which the DVBE will be contracting.

END OF SECTION

DVBE REQUIREMENTS

Section 1.01 DVBE Policy

Definitions:

The term "Disabled Veteran Business Enterprise" (DVBE) means a business concern that is certified as a DVBE by the Department of General Services, Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS).

The term "Bidder" means any person or persons, firm, partnership, corporation, or combination thereof making an offer, a proposal, or submitting a response to the Bidding Documents with the intent of forming a Contract with the District on the Project.

The term "Contractor" means the Bidder to whom the Contract is awarded.

The term "Participation Goal" or "Goal" means a numerically expressed DVBE objective that Bidders are required to make efforts to achieve in accordance with Section 17076.11 of the Education Code.

The term "Equipment Broker" means a DVBE that rents equipment ***unless*** one or more disabled veterans has at least a 51% ownership of the equipment. If the equipment is owned by one or more disabled veterans, then, to avoid being an Equipment Broker, each disabled veteran owner shall, prior to performance, submit a declaration signed by the disabled veteran owner stating that the owner is a disabled veteran and providing the name, address, telephone number, and tax identification number of the disabled veteran owner.

DVBE Goals:

In accordance with Education Code section 17076.11, the District has a Participation Goal for DVBEs of three percent (3%). Prior to, and as a condition precedent for, final payment, the Contractor shall provide documentation to the District identifying the amount paid to DVBEs under the Contract, so that the District can assess its success at meeting this Participation Goal.

For any work performed by a prime contractor or subcontractor (including materials suppliers) to be counted toward meeting the DVBE Participation Goal, such business concern must possess current and valid certification as a DVBE through the OSDS. In addition, the work must conform to the most current regulations and requirements as published by the California Department of General Services (DGS) and/or OSDS. For additional information see http://www.dgs.ca.gov/pd/Programs/OSDS.aspx.

Section 1.02 Participation Goal

The Participation Goal for this contract is 3%. Rental of equipment from an Equipment Broker shall not be credited towards the DVBE goal.

The Bidder shall perform the portion of work identified in its subcontractor list with the listed DVBEs.

In attempting to meet the Participation Goal, Bidders are expected to do the following:

1. Select portions of the work for which to solicit DVBEs. This may include breaking out contract work into smaller units or soliciting DVBEs for portions of the work that the Bidder might prefer to perform itself.

2. Search at least the OSDS DVBE database to identify DVBEs to solicit to perform the portions of work.

3. Advertise for DVBE participation in focus or trade publications reasonably expected to reach DVBEs in the region as early in the process as is practicable.

4. Solicit interest from identified DVBEs as early in the bidding process as practicable to allow the DVBEs to respond to the solicitation and submit a timely bid.

5. Follow up initial solicitations.

6. Work with interested DVBEs, including providing adequate information about the Project and portions of work available and negotiating in good faith with interested DVBEs to assist them with being able to bid.

Section 1.03 Substitutions

The Contractor must use the DVBE subcontractor(s) and/or supplier(s) proposed unless the Contractor requests and receives authorization to substitute from the District. A DVBE subcontractor or supplier shall be replaced by another DVBE, if possible. The DVBE will be given the rights afforded by Public Contract Code section 4107 prior to the District acting on a requested substitution.

FAILURE TO ADHERE TO THE DVBE PARTICIPATION PROPOSED BY THE SUCCESSFUL BIDDER MAY BE CAUSE FOR CONTRACT TERMINATION AND/OR RECOVERY OF DAMAGES UNDER THE RIGHTS AND REMEDIES UNDER THE DEFAULT SECTION OF THE CONTRACT.

DVBE AND GOOD FAITH EFFORTS REQUIREMENTS

Section 1.01 DVBE Policy

Definitions:

The term "Disabled Veteran Business Enterprise" (DVBE) means a business concern that is certified as a DVBE by the Department of General Services, Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS).

The term "Bidder" means any person or persons, firm, partnership, corporation, or combination thereof making an offer, a proposal, or submitting a response to the Bidding Documents with the intent of forming a Contract with the District on the Project.

The term "Contractor" means the Bidder to whom the Contract is awarded.

The term "Participation Goal" or "Goal" means a numerically expressed DVBE objective that Bidders are required to make efforts to achieve in accordance with Section 17076.11 of the Education Code.

The term "Equipment Broker" means a DVBE that rents equipment ***unless*** one or more disabled veterans has at least a 51% ownership of the equipment. If the equipment is owned by one or more disabled veterans, then, to avoid being an Equipment Broker, each disabled veteran owner shall, prior to performance, submit a declaration signed by the disabled veteran owner stating that the owner is a disabled veteran and providing the name, address, telephone number, and tax identification number of the disabled veteran owner.

The term "Good Faith Efforts" or "GFE" means that the Bidder took all necessary and reasonable steps to achieve the DVBE Participation Goal which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DVBE participation, even if they were not fully successful. Good Faith Efforts are further delineated in Section 1.02 below.

DVBE Goals:

In accordance with Education Code section 17076.11, the District has a Participation Goal for DVBEs of three percent (3%). Prior to, and as a condition precedent for, final payment, the Contractor shall provide documentation to the District identifying the amount paid to DVBEs under the Contract, so that the District can assess its success at meeting this Participation Goal.

For any work performed by a prime contractor or subcontractor (including materials suppliers) to be counted toward meeting the DVBE Participation Goal, such business concern must possess current and valid certification as a DVBE through the OSDS. In addition, the work must conform to the most current regulations and requirements as published by the California Department of General Services (DGS) and/or OSDS. For additional information see http://www.dgs.ca.gov/pd/Programs/OSDS.aspx.

Section 1.02 Requirements; Good Faith Efforts (GFE)

The Participation Goal for this contract is 3%. Rental of equipment from an Equipment Broker shall not be credited towards the DVBE goal.

The Bidder shall either commit to meeting the Participation Goal or demonstrate Good Faith Efforts to do so, as described below. If the Bidder is a DVBE, then the Bidder must clearly identify that fact in its bid. If the Bidder is not a DVBE, then all DVBEs for which the Bidder is claiming credit must be listed on the Subcontractor listing form and identified as DVBEs, even if the work to be performed is less than one-half of one percent (0.5%) of the bid amount, involves supply of materials, or is to be performed by a lower-tier subcontractor. Work to be performed by a lower tier subcontractor must be identified as such on the listing form to avoid the Bidder listing two subcontractors for the same scope of work.

Although GFE have been eliminated from Public Contract Code sections 10115 *et seq*., the District's obligation is separately stated under Education Code section 17076.10 and its OPSC grant, so the District may find a Bidder to have complied with the DVBE requirements if it establishes GFE. To establish GFE, the Bidder must demonstrate at least the following:

1. Select portions of the work for which to solicit DVBEs in order to increase the likelihood that the DVBE goals will be achieved. This may include breaking out contract work items into smaller units or soliciting DVBEs for portions of the work that the Bidder might otherwise prefer to perform itself. ***Identify the selected portions of work in the GFE documentation.***

2. Search at least the OSDS DVBE database to identify DVBEs to solicit to perform the portions of work identified. ***Print the search results to include with the GFE documentation.***

3. Advertise for DVBE participation in focus or trade publications reasonably expected to reach DVBEs in the region as early in the process as is practicable. Depending on the project and results, multiple advertisements may be appropriate. Generally, the first publication should occur **no later than** one week after the pre-bid conference. ***Submit a copy of the advertisement(s) with the GFE documentation.***

4. Solicit interest from identified DVBEs (from the OSDS database or otherwise) as early in the bidding process as practicable to allow the DVBEs to respond to the solicitation and submit a timely bid. Solicitations may be by phone, fax, email, letter, or other reasonable means, but must be documented. ***Submit documentation of all outreach efforts with the GFE documentation. Include copies of all DVBE responses.***

5. Follow up initial solicitations. ***Document all such efforts and DVBE responses as part of the GFE documentation.***

6. Work with interested DVBEs, including providing adequate information about the Project and portions of work available and negotiating in good faith with interested DVBEs to assist them with being able to bid. ***Document all such efforts with the GFE documentation.***

All documentation of GFE must be submitted within 24 hours following the bid deadline. Documentation submitted after that time will not be considered.

Bidders planning to meet the Participation Goal may still want to document GFE in the event of a shortfall in planned DVBE participation or other disqualification of a listed DVBE.

Section 1.03 Substitutions

The Contractor must use the DVBE subcontractor(s) and/or supplier(s) proposed unless the Contractor requests and receives authorization to substitute from the District. A DVBE subcontractor or supplier shall be replaced by another DVBE, if possible. The DVBE will be given the rights afforded by Public Contract Code section 4107 prior to the District acting on a requested substitution.

FAILURE TO ADHERE TO THE DVBE PARTICIPATION PROPOSED BY THE SUCCESSFUL BIDDER MAY BE CAUSE FOR CONTRACT TERMINATION AND/OR RECOVERY OF DAMAGES UNDER THE RIGHTS AND REMEDIES UNDER THE DEFAULT SECTION OF THE CONTRACT.

Good Faith Effort Checklist

The following checklist is provided to assist Bidders in compiling their good faith efforts documentation. Bidders are encouraged, but not required, to submit the checklist with their documentation. Bidders should not consider the following checklist to identify all actions that can or must be taken to establish good faith efforts, which will depend on the circumstances encountered by the Bidder. Bidders should explain any circumstances that they want the District to consider in evaluating the good faith efforts.

Item #	Description	Items Attached
1.	Identify portions of work for which DVBEs were solicited (can be done below).	☐
2.	Provide copies of printed search results from California Office of Small Business & Disabled Veterans' (OSDS) DVBE Database **Recommendation:** If the bidder does not solicit substantially all of the DVBEs identified on the printout(s), explain how the bidder selected the DVBEs to solicit.	☐
3.	Provide copies of DVBE Advertisements	☐
4.	Provide copies of all solicitation efforts including phone calls, fax, email, letter or other reasonable means, as well as all responses. **Recommendation:** If significant numbers of the solicited DVBEs cannot be reached or indicate that they do not intend to bid, then the Bidder is encouraged to identify additional DVBEs to solicit for participation.	☐
5.	Provide copies of follow-up to initial solicitations and all responses. Identify the date, time, and manner of the follow-up and any responses received. **Recommendation:** If significant numbers of the solicited DVBEs cannot be reached or indicate that they do not intend to bid, then the Bidder is encouraged to identify additional DVBEs to solicit for participation.	☐
6.	If the Bidder worked with interested DVBEs, describe all such efforts.	☐
7.	Describe any additional circumstances that the Bidder wants the District to consider in evaluating good faith efforts, including any additional actions taken to secure DVBE participation.	☐

SECTION 00 45 90 - POST BID INTERVIEW

SUMMARY

If requested by the District, this Section requires the apparent low bidder to attend and participate in a Post Bid Interview with the Construction Manager, prior to award of any contract by the District. The Post Bid Interview will be scheduled by the Construction Manager within three (3) calendar days after the date of bid.

REQUIRED ATTENDANCE

A duly authorized representative of the apparent low bidder is required to attend the Post Bid Interview, in person.

The apparent low bidder's authorized representative(s) must have (1) knowledge of how the bid submitted was prepared, (2) the person responsible for supervising performance of the Work, and (3) the authority to bind the apparent low bidder.

Failure to attend the Post Bid Interview as scheduled will be considered just cause for the District to reject the Bid as nonresponsive.

POST BID INTERVIEW PROCEDURE

The Construction Manager will review the Bid with the attendees.

The Construction Manager will review the Contract Documents with the attendees, including but not limited to:

Insurance

Bonding

Addenda

Pre-Bid Clarifications

Scope of Work

Bid Packages Descriptions

Bid Alternates

Contract Plans

Contract Specifications

Project Schedule and Schedule Requirements

Critical Dates Requirement for Other Bid Packages

Prevailing Wage Requirements

Liquidated Damages

Required Documentation for Contract Administration

Contract Coordination Requirements

POST BID INTERVIEW DOCUMENTATION

The Construction Manager will document the Post Bid Interview on the form attached to this Section. Both the apparent low bidder and the Construction Manager are required to sign the Post Bid Interview Documentation.

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POST BID INTERVIEW

CONSTRUCTION MANAGER

[Name]
[Address 1]
[Address 2]
[Phone] [Fax]

BIDDER: _____

DATE: _____ TIME: _____ PHONE: _____

1. INTRODUCTIONS:
   Present
   a. _____ _____
   CONTRACTOR CONTRACTOR
   _____ _____
   _____ _____
   [CM] [CM]

2. PROPOSED CONTRACT:

3. PURPOSE OF INTERVIEW IS TO ASSURE A MUTUAL UNDERSTANDING OF THE FOLLOWING:

   a. Do you acknowledge submission of a complete and accurate bid? Yes No

   b. Do you acknowledge the Bid Document submittal timelines after NOA and NTP and can you meet those timelines? Yes No

   c. Do you acknowledge the requirements for the escrow of bid documents? Yes No

   d. Are you comfortable with your listed subcontractors? Yes No

4. CONTRACTUAL REQUIREMENTS:

   a. Do you understand you are a prime contractor? Yes No

   b. Can you meet specified insurance requirements? Yes No

      (1) Do any of your policies that require Additional Insured endorsements exceed the minimum coverage requirements? Yes No

      (2) Are you requesting that the District accept an Excess Liability Insurance Policy to meet the policy limit? Yes No

      (3) Will there be a gap between the per occurrence amount of any underlying policy and the start of the coverage under the Umbrella or Excess Liability Insurance Policy? Yes No

c. Will you provide the Performance Bond and Labor and Material Bond for 100% of the Contract Price as stipulated? Yes No

(1) Cost for bonds: _____% Yes No

(2) Is the cost of your bonds in your base bid? Yes No

(3) Is your surety licensed to issue bonds in California? Yes No

d. Do you understand the fingerprinting requirements? Yes No

e. Is it understood that all workers must be paid prevailing wage? Yes No

f. Is it understood that all subcontractors of every tier must be registered as a public works contractor with the Department of Industrial Relations? Yes No

5. SCOPE OF WORK:

a. Acknowledged Receipt of Addenda #1-_ Yes No

b. Are the costs for addenda items included in your bid? (if applicable) Yes No

c. Do you have a complete understanding of your Scope of Work under the proposed Agreement? Yes No

d. You have re-reviewed the documents and understand the Scope of the Work. Are there any items that require clarification? Yes No
If yes, please identify them.

(1) _____

_____

(2) _____

_____

(3) _____

_____

Is (are) there additional cost(s) for the above item(s)?
Yes No

e. Is the cost for allowance included in your bid? Yes No

f. Have you reviewed bid alternative(s) #1-____? (if applicable) Yes No

g. Are the costs for bid alternatives included in your bid? Yes No

h. Are the plans and specifications clear and understandable to your satisfaction? Yes No

i. Do you acknowledge that the time to submit notice of requests for substitution of specified materials has expired? Yes No

6. SCHEDULE:

a. Do you acknowledge and agree to the stipulated completion dates and milestones in the contract? Yes No

(1) Will you provide a detailed construction schedule to _____ within the required ten (10) days of the Notice to Proceed, per the contract? Yes No

(2) Can you meet the submittal deadline? Yes No

(3) It is understood that the Project schedule is critical and that that weekend and overtime work may be required to meet the milestones. Yes No

(4) It is understood that if rain does occur, then all dewatering and protection of work is required, per the contract. Yes No
If not, what do you believe must change and why?

_____

_____

_____

b. Identify critical materials, deliveries, long lead items and other dependencies, including Owner Furnished items that could affect the completion of your work. Yes No

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

c. Do you understand that there is going to be maintenance and other construction taking place on site during the course of the project? Yes No

7. EXECUTION OF WORK

a. Do you understand the access to the site? Yes No

b. Do you understand the staging area restrictions? Yes No

c. Have you included protection of [asphalt, floors, and roofs]? Yes No

d. Do you understand that the site is occupied by students, teachers, administrators, parents, etc.? Yes No

8. CONTRACTOR COMMENTS/SUGGESTIONS:

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

9. CONTRACTOR

You agree the information contained herein is part of your contractual obligations. Your signature acknowledges your agreement to perform all Work in the Contract Documents, and that costs for all Work are included in your bid.

The foregoing information is true and accurate, and I am authorized to sign as an officer of the company I am representing.

[Company Name]

_____

Signature _____ Title: _____

Date: _____

10. CONSTRUCTION MANAGER

Signature _____ Title: _____

Date: _____

Title of Document: POST BID INTERVIEW
Number of Pages: _____
Date of Document: _____

Section 00 52 00 - FORM OF CONTRACT

ARTICLE 1. AGREEMENT FOR CONSTRUCTION

This contract is contingent upon Sacramento City Unified School District Board approval and will not be valid unless approved.

THIS AGREEMENT is made and entered into as of this **[Date written out]**, by and between the Sacramento City Unified School District ("District"), and _____, a California corporation, Contractors State License Board license number _____ ("Contractor").

District and Contractor hereby mutually agree as follows:

Section 1 - SCOPE OF WORK.
Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor and materials and transportation necessary to perform and complete in a good and workmanlike manner to the satisfaction of District, all work called for and in the manner designated in, and in strict accordance with, the Contract Documents as defined in Section 2 hereof, the Work for the **0097-489 Abraham Lincoln ES Phase 1 TK Expansion Project.**

Section 2 - CONTRACT DOCUMENTS.
The Contract Documents, sometimes also referred to as "the Contract", consist of the Notice to Bidders, the Instructions for Bidders, the Bid, the Agreement for Construction, the Performance Bond, the Payment Bond, these General Conditions, the Special Provisions, the General Requirements, Exhibits, the Technical Specifications, the Contract Drawings and Plans, all duly issued addenda, Interpretations, Change Orders, supplemental drawings, Architect's Instruction Bulletins, the Contractor's Guarantee and Bond, the Hazardous Materials Requirements (if any), the Construction Forms Manual, and the Contract Schedule.

Section 3 - DEFINITIONS.
Unless otherwise specifically provided herein, all words and phrases defined in the General Conditions shall have the same meaning and intent in this Agreement.

Section 4 - CONTRACT AMOUNT AND PAYMENT.
District agrees to pay and Contractor agrees to accept, for the full and complete performance of this Agreement for the Work performed the sum of _____ DOLLARS $_____ ("Contract Sum"), subject to adjustment as provided in the Contract Documents.

Monthly progress payments shall be made in accordance with Article 12 of the General Conditions of the Contract Documents.

Final payment shall be made in accordance with Article 21 of the General Conditions.

Section 5 – CONTRACT TIME.
The Work shall be commenced on the date specified in the District's "Notice to Proceed," and shall be fully completed as described in the Contract Documents, including, without limitation, submittal of all close-out documentation **within 70 calendar days from the commencement date stated in the "Notice to Proceed"** together with such additional time as may be provided by any change order issued pursuant to the Contract Documents.

Time is of the essence in this Agreement and the Contract Documents. Failure of Contractor to complete the Work by the completion date and in the manner provided for by the Contract Documents, as that time may be extended by Change Order, shall subject Contractor to liquidated damages as hereinafter provided in this Agreement and the Contract Documents.

Section 6 - NO WAIVER BY PERFORMANCE; REMEDIES.
No action by the District or its representatives in performing this Agreement, including without limitation inspection or payment, shall operate as a waiver of any provision of this Agreement or the Contract Documents or of any legal right of District unless such waiver is expressly stated in writing. No waiver of any breach of this Agreement or of the Contract Documents shall waive any other or subsequent breach. In addition to each and every remedy provided in this Agreement and/or the Contract Documents, District shall have any and all equitable and legal remedies otherwise available to it.

Section 7 - LIQUIDATED DAMAGES.
Liquidated damages may be assessed against Contractor in accordance with Article 14 of the General Conditions and the Special Provisions, in the amount of **$2,500** per calendar day if Contractor fails to substantially complete the Work within the Contract Time, as that time may be extended by change order, and in the amount of $100 per calendar day after substantial completion and until final completion. The provision for liquidated damages in the Contract Documents shall not act as a limitation upon District if Contractor abandons the Work. In such event, Contractor shall be liable to District for all losses incurred.

Section 8 - PERFORMANCE AND PAYMENT BONDS.
As a condition of award of this Agreement, Contractor was required to file a Performance Bond and a Payment Bond with District. These bonds shall be maintained during the entire life of the Agreement at the expense of Contractor. Each bond shall be in the amount of one hundred percent (100%) of the Contract Sum. Any alteration or alterations made in any provision of the Contract shall not operate to release any surety from any liability on any bond required hereunder and the consent to make such alterations is hereby given, and any surety on said bonds must waive the provisions of Section 2819 of the Civil Code.

Section 9 - UNFAIR COMPETITION.
The following provision is included in this Agreement pursuant to California Public Contract Code section 7103.5.

> "In entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body 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. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700 of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgment by the parties."

Section 10 - ASSIGNMENT.
Neither this Agreement nor any rights herein of Contractor shall be assigned without the written consent of District first obtained.

Section 11 - NO THIRD PARTY BENEFICIARIES.
This Agreement is entered into solely between District and Contractor. There are no third-party beneficiaries, intended, unintended, or otherwise to this Agreement.

Section 12 - AGREEMENT BINDING.
This Agreement shall bind and insure to the heirs, devisees, assignees, and successors in interest of Contractor and to the successors in interest of District in the same manner as if such parties had been expressly named herein.

Section 13 - AGREEMENT CONTROLS.
In the event of a conflict between the terms and conditions set forth in this Agreement and the terms and conditions set forth in the other Contract Documents, the terms and conditions set forth in this Agreement shall prevail.

Section 14 - FINGERPRINTING.
Education Code sections 45125.1 and 45125.2 apply to this Agreement. Contractor shall, prior to commencement of Work, comply with either of the methods of ensuring safety set forth in Education Code section 45125.2(a)(1) (installation of a physical barrier) or 45125.2(a)(2) (continual supervision by an employee of Contractor who has not been convicted of a serious or violent felony). If Contractor elects to provide continual supervision pursuant to Education Code section 45125.2(a)(2), Contractor shall require the person(s) who will provide that continual supervision to be fingerprinted by the Department of Justice ("DOJ"). Upon verification from DOJ that those persons fingerprinted have no record of a serious or violent felony, Contractor will so certify by signing and submitting to District, through the District Representative, the certification form attached as Exhibit A and incorporated by reference. In addition, Contractor shall submit the names of those persons who have received clearance on a form as indicated in Exhibit B. Any person whose name is not on the cleared list may not have such access. In that case, Contractor must make arrangements with District for appropriate access. No person with a violent or serious felony as reported by DOJ may have access to the school campuses.

Failure to comply with this Section of this Agreement at all times, or permitting unsupervised access by an employee whose name has not been cleared by DOJ as certified by Contractor, shall constitute grounds for termination of this Agreement.

Section 15 - GOVERNING LAW.
This Agreement will be governed by and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

Contractors are required by law to be licensed and regulated by the Contractor's State License Board, which has jurisdiction to investigate complaints against contractors if a complaint is filed within three years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

District: Sacramento City Unified School District

By: _____
Name

Its: Mary Hardin Young, Deputy Superintendent

Contract Amount: _____

By: _____
Name

Its: _____

(Signatures continued on following page)

Board Approval Date:_____

Contractor:_____

By: _____

Its: _____

Business Address:_____
_____
License Number:_____
Contractor DIR Registration #:_____
Federal I.D. #:_____

CORPORATE CERTIFICATE

I, _____, certify that I am the Secretary of the corporation named as Contractor in the foregoing contract; that _____, who signed said contract on behalf of said corporation is authorized to fully bind the corporation to this Agreement; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

_____
Secretary

EXHIBIT A TO FORM OF CONTRACT

CRIMINAL BACKGROUND INVESTIGATION /FINGERPRINTING CERTIFICATION

The undersigned does hereby certify to the District that I am a representative of the Contractor currently under contract with the District; that I am familiar with the facts herein certified; and that I am authorized and qualified to execute this certificate on behalf of Contractor.

Contractor certifies that it has taken at least one of the following actions (check all that apply):

☐ Pursuant to Education Code section 45125.2(a), Contractor has installed or will install, prior to commencement of Work, a physical barrier at the Work Site, that will limit contact between Contractor's employees, Subcontractors or suppliers and District pupils at all times; and/or

☐ Pursuant to Education Code section 45125.2(a), Contractor certifies that all employees will be under the continual supervision of, and monitored by, an employee of the Contractor who the California Department of Justice ("DOJ") has ascertained, or as described below, will ascertain, has not been convicted of a violent or serious felony. The name and title of the employee who will be supervising Contractor's and its subcontractors' or suppliers' employees is:

Name: _____

Title: _____

NOTE: If Contractor is a sole proprietor, and elects the above option, Contractor must have the above-named employee's fingerprints prepared and submitted by District for submission to the DOJ, in accordance with Education Code section 45125.1(h). No work shall commence until such determination by DOJ has been made.

☐ Pursuant to Education Code section 45125.2(a), the District will take appropriate steps to protect the safety of any pupils that may come in contact with Contractor's employees, subcontractors or suppliers so that the fingerprinting and criminal background investigation requirements of Education Code section 45125.2 shall not apply to Contractor under the Contract.

☐ The Work on the Contract is either (i) at an unoccupied school site and no employee of Contractor and/or subcontractor or supplier of any tier of the Contract shall come in contact with the District pupils or (ii) if Contractor's employees or any subcontractor or supplier of any tier of the Contract interacts with pupils, such interaction shall only take place under the immediate supervision and control of the pupil's parent or guardian or a school employee, so that the fingerprinting and criminal background investigation requirements of Education Code section 45125.1 shall not apply to Contractor under the Contract.

☐ The Contractor, who is not a sole proprietor, has complied with the fingerprinting requirements of Education Code section 45125.1 with respect to all Contractor's employees and all of its Subcontractors' employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and the DOJ has determined (A) that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1 and/or (B) that the prohibition does not apply to an employee as provided by Education Code section 45125.1(e)(2) or (3). When the Contractor performs the criminal background check, it shall immediately provide any subsequent arrest and conviction information it receives to the District pursuant to the subsequent arrest service. No work shall commence until the Department of Justice ascertains that Contractor's employees and any subcontractors' employees have not been convicted of a felony as defined in Government Code Section 45122.1.

A complete and accurate list of Contractor's employees and of all of its subcontractors' employees who may come in contact with District pupils during the course and scope of the Contract is attached hereto as EXHBIT B FORM OF CONTRACT" and/or

☐ The Contractor is a sole proprietor and intends to comply with the fingerprinting requirements of Education Code section 45125.1(h) with respect to all Contractor's employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and hereby agrees to the District's preparation and submission of fingerprints such that the DOJ may determine (A) that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1 and/or (B) that the prohibition does not apply to an employee as provided by Education Code section 45125.1(e)(2) or (3). No work shall commence until the Department of Justice ascertains that Contractor's employees and any subcontractors' employees have not been convicted of a felony as defined in Government Code Section 45122.1.

Contractor's responsibility for background clearance extends to all of its employees, Subcontractors or suppliers, and employees of Subcontractors or suppliers coming into contact with District pupils regardless of whether they are designated as employees or acting as independent contractors of the Contractor.

EXHIBIT B TO FORM OF CONTRACT

List of Employees/Subcontractors With DOJ Clearance

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

If further space is required for the list of employees/subcontractors, attach additional copies of this page.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT C TO FORM OF CONTRACT

WORKERS' COMPENSATION CERTIFICATION

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:
>
> By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state; and/or
>
> 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 his employees.

I am aware of the provisions of section 3700 of the Labor Code 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 provisions before commencing the performance of the Work of this Contract.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(In accordance with Labor Code sections 1860 and 1861, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

EXHIBIT D TO FORM OF CONTRACT

PREVAILING WAGE AND
RELATED LABOR REQUIREMENTS CERTIFICATION

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours' notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project including, without limitation, labor compliance monitoring and enforcement by the Department of Industrial Relations.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT E TO FORM OF CONTRACT

DRUG-FREE WORKPLACE CERTIFICATION

This Drug-Free Workplace Certification form is required from the successful Bidder pursuant to 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 doing 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.

The District is not a “state agency” as defined in the applicable section(s) of the Government Code, but the District is a local agency and public school district under California law and requires all contractors on District projects to comply with the provisions and requirements of the Drug-Free Workplace Act of 1990.

Contractor must also comply with the provisions of Health & Safety Code section 11362.3 which prohibits the consumption or possession of cannabis or cannabis products in any public place, including school grounds, and specifically on school grounds while children are present.

Contractor shall certify that it will provide a drug-free workplace by doing all of the following:

a. 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.

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

   1. The dangers of drug abuse in the workplace.

   2. The person’s or organization’s policy of maintaining a drug-free workplace.

   3. The availability of drug counseling, rehabilitation, and employee-assistance programs.

   4. The penalties that may be imposed upon employees for drug abuse violations.

c. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required above, 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 publish a statement notifying employees concerning (a) the prohibition of controlled substance at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by section 8355(a), and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the 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 the aforementioned Act.

I acknowledge that I am aware of the provisions of and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990 and Health and Safety Code section 11362.3.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT F TO FORM OF CONTRACT

TOBACCO-FREE ENVIROMENT CERTIFICATION

This Tobacco-Free Environment Certification form is required from the successful Bidder.

Pursuant to, without limitation, 20 U.S.C. section 6083, Labor Code section 6400 et seq., Health & Safety Code section 104350 et seq., Business and Professions Code section 22950 et seq., and District Board policies, all District sites, including the Project site, are tobacco-free environments. Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school-owned vehicles and vehicles owned by others while on District property. The prohibition on smoking includes the use of any electronic smoking device that creates an aerosol or vapor, in any manner or in any form, and the use of any oral smoking device for the purpose of circumventing the prohibition of tobacco smoking. Further, Health & Safety Code section 11362.3 prohibits the smoking or use of cannabis or cannabis products in any place where smoking tobacco is prohibited.

I acknowledge that I am aware of the District's policy regarding tobacco-free environments at District sites, including the Project site and hereby certify that I will adhere to the requirements of that policy and not permit any of my firm's employees, agents, subcontractors, or my firm's subcontractors' employees or agents, to use tobacco and/or smoke on the Project site.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT G TO FORM OF CONTRACT

HAZARDOUS MATERIALS CERTIFICATION

11. Contractor hereby certifies that no asbestos, or asbestos-containing materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations, ("New Hazardous Material"), shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to affect any portion of Contractor's work on the Project for District.

12. Contractor further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

13. Asbestos and/or asbestos-containing material shall be defined as all items containing but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Any or all material containing greater than one-tenth of one percent (0.1%) asbestos shall be defined as asbestos-containing material.

4. Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the District's determination. The costs of any such tests shall be paid by Contractor if the material is found to be New Hazardous Material.

5. All Work or materials found to be New Hazardous Material or Work or material installed with equipment containing New Hazardous Material will be immediately rejected and this Work will be removed at Contractor's expense at no additional cost to the District.

6. Contractor has read and understood the document titled Hazardous Materials Procedures & Requirements, and shall comply with all the provisions outlined therein. Contractor certifies that it is knowledgeable of, and shall comply with, all laws applicable to the Work including, but not limited to, all federal, state, and local laws, statutes, standards, rules, regulations, and ordinances applicable to the Work.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT H TO FORM OF CONTRACT

LEAD-BASED MATERIALS CERTIFICATION

This certification provides notice to the Contractor that:

Contractor's work may disturb lead-containing building materials.

Contractor shall notify the District if any work may result in the disturbance of lead-containing building materials.

Contractor shall comply with the Renovation, Repair and Painting Rule, if lead-based paint is disturbed in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors.

1. Lead as a Health Hazard

Lead poisoning is recognized as a serious environmental health hazard facing children today. Even at low levels of exposure, much lower than previously believed, lead can impair the development of a child's central nervous system, causing learning disabilities, and leading to serious behavioral problems. Lead enters the environment as tiny lead particles and lead dust disburses when paint chips, chalks, peels, wears away over time, or is otherwise disturbed. Ingestion of lead dust is the most common pathway of childhood poisoning; lead dust gets on a child’s hands and toys and then into a child’s mouth through common hand-to-mouth activity. Exposures may result from construction or remodeling activities that disturb lead paint, from ordinary wear and tear of windows and doors, or from friction on other surfaces.

Ordinary construction and renovation or repainting activities carried out without lead-safe work practices can disturb lead-based paint and create significant hazards. Improper removal practices, such as dry scraping, sanding, or water blasting painted surfaces, are likely to generate high volumes of lead dust.

Because the Contractor and its employees will be providing services for the District, and because the Contractor's work may disturb lead-containing building materials, CONTRACTOR IS HEREBY NOTIFIED of the potential presence of lead-containing materials located within certain buildings utilized by the District. All school buildings built prior to 1978 are presumed to contain some lead-based paint until sampling proves otherwise.

2. Overview of California Law

Education Code section 32240 et seq. is known as the Lead-Safe Schools Protection Act. Under this act, the Department of Health Services is to conduct a sample survey of schools in the State of California for the purpose of developing risk factors to predict lead contamination in public schools. (Ed. Code, § 32241.)

Any school that undertakes any action to abate existing risk factors for lead is required to utilize trained and state-certified contractors, inspectors, and workers. (Ed. Code, § 32243, subd. (b).) Moreover, lead-based paint, lead plumbing, and solders, or other potential sources of lead contamination, shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility. (Ed. Code, § 32244.)

Both the Federal Occupational Safety and Health Administration ("Fed/OSHA") and the California Division of Occupational Safety and Health ("Cal/OSHA") have implemented safety orders applicable to all construction work where a contractor's employee may be occupationally exposed to lead.

The OSHA Regulations apply to all construction work where a contractor's employee may be occupationally exposed to lead. The OSHA Regulations contain specific and detailed requirements

imposed on contractors subject to those regulations. The OSHA Regulations define construction work as work for construction, alteration, and/or repair, including painting and decorating. Regulated work includes, but is not limited to, the following:

a. Demolition or salvage of structures where lead or materials containing lead are present;

b. Removal or encapsulation of materials containing lead;

c. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

d. Installation of products containing lead;

e. Lead contamination/emergency cleanup;

f. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and

g. Maintenance operations associated with the construction activities described in the subsection.

Because it is assumed by the District that all painted surfaces (interior as well as exterior) within the District contain some level of lead, it is imperative that the Contractor, its workers and subcontractors fully and adequately comply with all applicable laws, rules and regulations governing lead-based materials (including title 8, California Code of Regulations, section 1532.1).

Contractor shall notify the District if any Work may result in the disturbance of lead-containing building materials. Any and all Work that may result in the disturbance of lead-containing building materials shall be coordinated through the District. A signed copy of this Certification shall be on file prior to beginning Work on the Project, along with all current insurance certificates.

3. Renovation, Repair and Painting Rule, Section 402(c)(3) of the Toxic Substances Control Act

The EPA requires lead safe work practices to reduce exposure to lead hazards created by renovation, repair and painting activities that disturb lead-based paint. Pursuant to the Renovation, Repair and Painting Rule (RRP), renovations in homes, childcare facilities, and schools built prior to 1978 must be conducted by certified renovations firms, using renovators with training by a EPA-accredited training provider, and fully and adequately complying with all applicable laws, rules and regulations governing lead-based materials, including those rules and regulations appearing within title 40 of the Code of Federal Regulations as part 745 (40 CFR 745).

The RRP requirements apply to all contractors who disturb lead-based paint in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors. If a DPH-certified inspector or risk assessor determines that a home constructed before 1978 is lead-free, the federal certification is not required for anyone working on that particular building.

4. Contractor's Liability

If the Contractor fails to comply with any applicable laws, rules, or regulations, and that failure results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective actions, and shall defend, indemnify, and hold harmless the District, pursuant to the indemnification provisions of the Contract, for all damages and other claims arising therefrom.

If lead disturbance is anticipated in the Work, only persons with appropriate accreditation, registrations, licenses, and training shall conduct this Work.

It shall be the responsibility of the Contractor to properly dispose of any and all waste products, including, but not limited to, paint chips, any collected residue, or any other visual material that may occur from the prepping of any painted surface. It will be the responsibility of the Contractor to provide the proper disposal of any hazardous waste by a certified hazardous waste hauler. This company shall be registered with the Department of Transportation (DOT) and shall be able to issue a current manifest number upon transporting any hazardous material from any school site within the District.

The Contractor shall provide the District with any sample results prior to beginning Work, during the Work, and after the completion of the Work. The District may request to examine, prior to the commencement of the Work, the lead training records of each employee of the Contractor.

THE CONTRACTOR HEREBY ACKNOWLEDGES, UNDER PENALTY OF PERJURY, THAT IT:

1. HAS RECEIVED NOTIFICATION OF POTENTIAL LEAD-BASED MATERIALS ON THE OWNER'S PROPERTY;

2. IS KNOWLEDGEABLE REGARDING AND WILL COMPLY WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS GOVERNING WORK WITH, AND DISPOSAL, OF LEAD.

THE UNDERSIGNED WARRANTS THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR. THE DISTRICT MAY REQUIRE PROOF OF SUCH AUTHORITY.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT I TO FORM OF CONTRACT

IMPORTED MATERIALS CERTIFICATION

This form shall be executed by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site and shall be provided to the District at least ten (10) days before delivery. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, section 21000 et seq. of the Public Resources Code ("CEQA"), and all requirements of section 17210 et seq. of the Education Code, including requirements for a Phase I environmental assessment acceptable to the State of California Department of Education and Department of Toxic Substances Control.

Certification of: □ Delivery Firm/Transporter □ Supplier □ Manufacturer
□ Wholesaler □ Broker □ Retailer
□ Distributor □ Other _____

Type of Entity □ Corporation □ General Partnership
□ Limited Partnership □ Limited Liability Company
□ Sole Proprietorship □ Other _____

Name of firm ("Firm"): _____

Mailing address: _____

Addresses of branch office used for this Project: _____

If subsidiary, name and address of parent company: _____

_____

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided, delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: _____

Proper Name of Firm: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT J TO FORM OF CONTRACT

DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION CERTIFICATION

GENERAL INSTRUCTIONS

Section 17076.11 of the Education Code requires school districts using, or planning to use, funds allocated pursuant to the State of California School Facility Program ("Program") for the construction and/or modernization of school buildings to have a participation goal for disabled veteran business enterprises ("DVBE") of at least three percent (3%) per year of the overall dollar amount expended each year by the school district on projects that receive state funding. Therefore, the lowest responsive responsible Bidder awarded the Contract must submit this document to the District with its executed Agreement, identifying the steps contractor took to solicit DVBE participation in conjunction with this Contract. **Do not submit this form with your bids. This Form must be provided to the District no later than 24 hours after bid opening.**

PART I – Method of Compliance with DVBE Participation Goals. Check the appropriate box to indicate your method of committing the contract dollar amount.

YOUR BUSINESS ENTERPRISE IS:	AND YOU WILL	AND YOU WILL
1.01 ☐ Disabled veteran owned and your forces will perform at least 3% of this Contract	Include a copy of your DVBE letter from Office of Small Business and Disabled Veterans Business Enterprise Services ("OSDS")*	Complete Part 1 of this form and the Certification
1.02 ☐ Disabled veteran owned but is unable to perform 3% of this Contract with your forces	Use DVBE subcontractors /suppliers to bring the Contract participation to at least 3%	Include a copy of each DVBE's letter from OSDS (including yours, if applicable), and complete Part 1 of this form and the Certification
1.03 ☐ NOT disabled veteran owned	Use DVBE subcontractors /suppliers for at least 3% of this Contract	
1.04 ☐ Unable to meet the required participation goals after good faith efforts	Make good faith efforts, including contacts, advertisement and DVBE solicitation	Complete all of this form and the Certification

* A DVBE letter from OSDS is obtained from the participating DVBE.

You must complete the following table to show the dollar amount of DVBE participation:

		TOTAL CONTRACT PRICE
1.01	**Prime Bidder, if DVBE (own participation)**	$
1.02	**DVBE Subcontractor or Supplier**	
	A.	
	B.	
	C.	
	D.	
1.03	**Subtotal (A & B)**	
1.04	**Non-DVBE**	
1.05	**Total Bid**	

PART II – Contacts. To identify DVBE subcontractors/suppliers for participation in your contract, you must contact each of the following categories. You should contact several DVBE organizations.

CATEGORY	TELEPHONE NUMBER	DATE CONTACTED	PERSON CONTACTED
A. The District, if any			*
B. OSDS, provides assistance locating DVBEs at https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	(916) 375-4940		*
C. DVBE Organization (List)			*

*Write “recorded message” in this column, if applicable.

PART III – Advertisement. You must advertise for DVBE participation in both a trade and focus paper. List the advertisement you place to solicit DVBE participation. Advertisements should be published at least fourteen (14) days prior to bid/proposal opening; if you cannot advertise fourteen (14) days prior, advertisements should be published as soon as possible. Advertisements must include that your firm is seeking DVBE participation, the project name and location, and your firm’s name, your contact person, and telephone number. Attach copies of advertisements to this form.

FOCUS/TRADE PAPER NAME	CHECK ONE		DATE OF ADVERTISEMENT
	TRADE	FOCUS	

PART IV – DVBE Solicitations. List DVBE subcontractors/suppliers that were invited to bid. Use the following instructions to complete the remainder of this section (read the three columns as a sentence from left to right). If you need additional space to list DVBE solicitations, please use a separate page and attach to this form.

IF THE DVBE…..	**THEN…..**	**AND…..**
was selected to participate	Check "YES" in the "SELECTED" column	include a copy of their DVBE letter(s) from OSDS
was **NOT** selected to participate	Check "NO" in the "SELECTED" column	state why in the "REASON NOT SELECTED" column
did not respond to your solicitation	Check the "NO RESPONSE" column.	

DVBE CONTACTED	**SELECTED**		**REASON NOT SELECTED**	**NO RESPONSE**
	YES	**NO**		

A copy of this form must be retained by you and may be subject to a future audit.

CERTIFICATION

I, _____, certify that I am the bidder's _____ and that I have made a diligent effort to ascertain the facts with regard to the representations made herein. In making this certification, I am aware of section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

EXHIBIT K TO FORM OF CONTRACT

REGISTERED SUBCONTRACTORS LIST
(Labor Code Section 1771.1)

Date Submitted (for Updates): _____

Contractor acknowledges and agrees that it must clearly set forth below the name and Department of Industrial Relations (DIR) registration number of each subcontractor **for all tiers** who will perform work or labor or render service to Contractor or its subcontractors in or about the construction of the Work **at least two (2) weeks before the subcontractor is scheduled to perform work**. This document is to be updated as all tiers of subcontractors are identified.

Contractor acknowledges and agrees that, if Contractor fails to list as to any subcontractor of any tier who performs any portion of Work, the Contract is subject to cancellation and the Contractor will be subjected to penalty under applicable law.

If further space is required for the list of proposed subcontractors, attach additional copies of page 2 showing the required information, as indicated below.

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Subcontractor Name: _____

DIR Registration #: _____

Portion of Work: _____

Date: _____

Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

Section 00 61 13.13 – PAYMENT BOND FORM

Bond No._____

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, Sacramento City Unified School District (the ”District”) has awarded to

_____as Principal a contract dated the _____day of _____, 2___, for the furnishing if all labor, materials, equipment, transportation and services for the construction of **0097-489 Abraham Lincoln ES Phase 1 TK Expansion Project,** located in Sacramento County, California (hereinafter referred to as the “Contract”); 15

AND WHEREAS, Principal is required to furnish a bond in connection with the Contract to secure the payment of claims of laborers, mechanics, material suppliers, and other persons as provided by law;

NOW THEREFORE, we the undersigned Principal and

_____ as Surety, are held and firmly bound unto the District in the sum of _____ DOLLARS $_____ for which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

1. THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by the District or its Subcontractors shall fail to pay any of the persons named in State of California Civil Code Section 9100, or amounts due under the State of California Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the State of California Employment Development Department from the wages of employees of Principal and subcontractors pursuant to Section 13020 of the State of California Unemployment Insurance Code with respect to such work and labor, that Surety will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall become and be null and void.

2. This Bond shall inure to the benefit of any and all persons, companies and corporations entitled to file claims under California law, including but not limited to the persons named in State of California Civil Code Section 9100 so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

3. Surety, for value received, hereby expressly agrees that no extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder, shall in any way affect the obligation of this bond; and it does hereby waive notice of any such extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder. Surety further waives the provisions of Section 2845 of the State of California Civil Code.

4. Amounts owed by the District to Principal under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under the Performance Bond. By Principal furnishing and the District accepting this Payment Bond, they agree that all funds earned by Principal in the performance of the Contract are dedicated to satisfy obligations of Principal and Surety under this Bond, subject to the District’s priority to use the funds for the completion of the Work or the satisfaction of the District’s claims, including liquidated damages, under the Contract.

5. Surety’s obligations hereunder are independent of the obligations of any other surety for the payment of claims of laborers, mechanics, material suppliers, and other persons in connection with the Contract; and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing the District rights against the other.

6. In the event suit is brought upon this bond, the parties not prevailing in such suit shall pay reasonable attorneys' fees and costs incurred by the prevailing parties in such suit.

7. Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

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

Principal: _____
(Name of Firm)

By: _____

Title: _____

Surety: _____
(Name of Firm)

By: _____

Title: _____

Address for Notices:

_____
_____
_____

Phone #_____

Fax # _____

Note: Notary Acknowledgement for Surety and Surety's Power of Attorney must be attached

Address for Owner Notices:

Sacramento City Unified School District
Attn: Chris Ralston, Assistant Superintendent – Facilities Support Services
5735 47th Avenue,
Sacramento, California 95824

Section 00 61 13.16 - PERFORMANCE BOND FORM

Bond No._____

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, Sacramento City Unified School District hereinafter referred to as "District" and _____ (hereinafter referred to as "Contractor"), have entered into a written contract dated the _____day of _____, 2___ for furnishing of all labor, materials, equipment, transportation and services for the construction of **0097-489 Abraham Lincoln Phase ES 1 TK Expansion Project,** located in Sacramento County, California (hereinafter referred to as the "Construction Contract") and

WHEREAS, Contractor is required by the terms of the Construction Contract to furnish a bond for the faithful performance of all terms and conditions of the Construction Contract;

NOW, THEREFORE, Contractor, as principal, and _____ (hereinafter referred to as "Surety"), as Surety, are held and firmly bound unto District and Claimants, as defined herein, in the penal sum of _____DOLLARS $_____, lawful money of the United States, for the payment of which sum well and truly to be made as provided in this Performance Bond.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to District for the performance of the Construction Contract, which is incorporated herein by reference.

2. If Contractor timely performs each and every obligation under the Construction Contract, including all Guarantee and/or warranty obligations, Surety and Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3. Surety's obligation under this Performance Bond shall arise after:

   3.1 District has declared a Contractor Default and has notified Contractor and Surety at its address described in Paragraph 10 below that District has declared a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than seven days after receipt of such notice to discuss methods of performing all remaining obligations of Contractor pursuant to the Construction Contract; and

   3.2 District has agreed to pay any remaining Balance of the Agreement Price, as calculated under the terms of the Construction Contract, to Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the Construction Contract with District.

4. When District has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

   4.1 Arrange for Contractor, with consent of District, to perform and complete the Construction Contract; or

   4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to District for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by District and the contractor selected with District's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to District the amount of damages as described in Paragraph 6 in excess of the Balance of the Agreement Price, as calculated under the terms of the Construction Contract, incurred by District resulting from Contractor's Default; or

4.4 Waive its right to perform and complete, arrange for completion, or obtain a new Contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to District and, as soon as practicable after the amount is determined, tender payment thereof to District; or

.2 Deny liability in whole or in part and notify District citing specific reasons therefore.

5. If Surety does not proceed as provided in Paragraph 4 within twenty days from receipt of the notice described in paragraph 3.1 (whether or not a conference has been held pursuant to paragraph 3.1), or such longer period upon which District and Surety may agree in writing, Surety shall be deemed to be in default on this Bond. If Surety proceeds as provided in Subparagraph 4.4, and District refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice District shall be entitled to enforce any remedy available to District.

6. After District has declared a Contractor Default, and if Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to District shall not be greater than those of Contractor under the Construction Contract, and the responsibilities of District to Surety shall not be greater than those of the District under the Construction Contract. To the limit of the amount of this Performance Bond, but subject to commitment by District of any remaining Balance of the Agreement Price to mitigation of costs and damages on the Construction Contract, Surety is obligated without duplication for:

6.1 The responsibilities of Contractor for correction of defective Work, materials and equipment and completion of the Construction Contract, including all Guarantee and warranty obligations;

6.2 Additional legal, design professional, construction management and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to District or others for obligations of Contractor that are unrelated to the Construction Contract, and the Balance of the Agreement Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than District or its heirs, executors, administrators or successors.

8. Surety, for value received, hereby expressly agrees that no extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder, shall in any way affect the obligation of this bond; and it does hereby waive notice of any such extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder. Surety further waives the provisions of Section 2845 of the State of California Civil Code.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction. The prevailing party in any such action shall be entitled to recover its attorneys' fees, to be taxed as an item of costs.

10. Notice to Surety, District or Contractor shall be mailed or delivered to the address, or sent via telecopier to the facsimile number, shown on the signature page.

11. DEFINITIONS

11.1 Balance of the Agreement Price: The total amount payable by District to Contractor under the Construction Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by District in settlement of insurance or other claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Construction Contract.

11.2 Construction Contract: The agreement between the District and the Contractor identified on the first page of this bond, including all Contract Documents and changes thereto.

11.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

CONTRACTOR, as Principal	SURETY
By: _____	By: _____
Its: _____	Its: _____
Address: _____	Address: _____
Phone #: _____	Phone #: _____
Fax #: _____	Fax #: _____
	Note: Notary Acknowledgement for Surety and Surety's Power of Attorney must be attached

Address for Owner Notices:

Sacramento City Unified School District
Attn: Chris Ralston, Assistant Superintendent – Facilities Support Services
5735 47th Avenue,
Sacramento, California 95824

Section 00 65 36 - GUARANTEE FORM

{Print on Contractor/Subcontractor Letterhead}

ARTICLE 1. GUARANTEE FORM

_____ [Contractor's Name] hereby unconditionally guarantees that the Work performed at **0097-489 Abraham Lincoln ES Phase 1 TK Expansion Project,** has been done in accordance with the requirements of the Contract therefore and further guarantees the Work of the Contract to be and remain free of defects in workmanship and materials for a period of two (2) years from and after the recordation of the Notice of Completion of the Project and completion of all Contract obligations by the Contractor, including formal acceptance of the entire Project by the District, unless a longer guarantee period is called for by the Contract Documents, in which case the terms of the longer guarantee shall govern. The Contractor specifically waives any right to claim or rely on the statutory definition of completion set forth in Civil Code section 9200. The Contractor specifically acknowledges and agrees that completion shall mean the Contractor's complete performance of all Work required by the Contract Documents, amendments, change orders, construction change directives and punch lists, and the District's formal acceptance of the entire Project, without regard to prior occupancy, substantial completion doctrine, beneficial occupancy, or otherwise. The Contractor hereby agrees to repair or replace any and all Work, together with any adjacent Work which may have been damaged or displaced in so doing, that may prove to be not in accordance with the requirements of the Contract or that may be defective in its workmanship or materials within the guarantee period specified, without any expense whatsoever to the District, ordinary wear and tear and unusual abuse and neglect only excepted. The Contractor has provided contract bonds, which will remain in full force and effect during the guarantee period.

The Contractor further agrees that within ten (10) calendar days after being notified in writing by the District of any Work not in accordance with the requirements of the contract or any defects in the Work, it will commence and prosecute with due diligence all Work necessary to fulfill the terms of this guarantee, and to complete the Work within a period of time stipulated in writing. In the event it fails to so comply, Contractor does hereby authorize the District to proceed to have such Work done at the Contractor's expense and it will pay the cost thereof upon demand. The District shall be entitled to all costs, including reasonable attorneys' fees, necessarily incurred upon the Contractor's refusal to pay the above costs.

The guarantee period for corrected defective work shall continue for a duration equivalent to the original guarantee period.

Notwithstanding the foregoing paragraph, in the event of an emergency constituting an immediate hazard to the health or safety of the employees of the District, or its property or licensees, the District may undertake at the Contractor's expense without prior notice, all Work necessary to correct such hazardous condition when it was caused by the Work of the Contractor not being in accordance with the requirements of this contract, or being defective, and to charge the same to the Contractor as specified in the preceding paragraph.

The guarantee set forth herein is not intended by the parties, nor shall it be construed, as in any way limiting or reducing the District's rights to enforce all terms of the Contract referenced hereinabove or the time for enforcement thereof. This guarantee is provided in addition to, and not in lieu of, the District's rights on such contract.

Spec Sections: _____

_____
CONTRACTOR'S SIGNATURE

_____
PRINT NAME

Section 00 72 00 - GENERAL CONDITIONS

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ARTICLE 1. DEFINITIONS AND PRINCIPLES OF INTERPRETATION

Section 1.01. Whenever the following terms, titles, or phrases are used in the Contract Documents, the intent and meaning thereof shall be as defined in this article.

Section 1.02. Architect.
The "Architect" is the architectural or engineering firm engaged as an agent by the District to perform the services set forth in the Contract Documents.

Section 1.03. Architect's Instruction Bulletin.
"Architect's Instruction Bulletins" are supplemental drawings or instructions which may be issued as necessary from time to time to make clear or define in greater detail the intent of the Contract Drawings and Specifications.

Section 1.04. Bid.
"Bid" shall mean the offer of the bidder to do the work.

Section 1.05. Board of Education.
"Board of Education" shall mean the duly elected officials constituting the Board of Education of the Sacramento City Unified School District.

Section 1.06. Change Order.
"Change Order" shall mean a written order to the Contractor, issued after execution of the Contract, signed by the District and the Contractor, authorizing a change in the Work and/or an adjustment in the Contract Sum and/or the Contract Time. Change Orders may incorporate CCDs, some of which require DSA approval prior to being incorporated into the Change Order.

Section 1.07. Construction Change Directive .
"Construction Change Directive" or "Directive" shall mean a written order to the Contractor, issued after execution of the Contract, signed by the District or the District Representative directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both, and which shall be used in the absence of total agreement with the Contractor on the terms of a Change Order or when time does not permit processing of a Change Order prior to implementation of the change.

Section 1.08. Construction Forms Manual.
The "Construction Forms Manual" is the District's manual containing sample forms extracted from the District's Project Management Information System which will be used during construction.

Section 1.09. Contract Change Document
"Contract Change Document" or "CCD" shall mean the following documents, which may be required to be submitted to DSA for approval prior to being implemented and incorporated into a Change Order: Architect's Instruction Bulletins, Construction Change Directives, Interpretations, RFIs, or Substitutions.

Section 1.10. Contract Documents.
The "Contract Documents" shall include the Notice to Bidders, the Instructions for Bidders, the Bid, the Agreement for Construction, the Performance Bond, the Payment Bond, these General Conditions, the Special Provisions, the General Requirements, the Project Labor Agreement, Exhibits, the Technical Specifications, the Contract Drawings and Plans, all duly issued pre-bid addenda, Interpretations, Change Orders, Directives, supplemental drawings, Architect's Instruction Bulletins, the Contractor's Guarantee and Bond, the Hazardous Materials Requirements (if any), the Construction Forms Manual, and the Contract Schedule.

Section 1.11. Contract Drawings or Plans.
The "Contract Drawings" (sometimes referred to as "Drawings" or "Plans") are the graphic and pictorial portions of the Contract Documents, showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams. This information may be developed and stored in a 3D or 4D model of the Project.

Section 1.12. Contract Schedule.
The "Contract Schedule" is the schedule produced by the Contractor in response to the requirements of the Contract Documents in accordance with all District milestone and other timing requirements.

Section 1.13. Contract Sum.
"Contract Sum" is the total amount payable by the District to the Contractor for the performance of the Work under the Contract Documents. The Contract Sum is the amount stated in the Agreement for Construction, including authorized adjustments thereto.

Section 1.14. Contract Time.
"Contract Time" shall mean the period specified for completion of the Work, as set forth in the Agreement for Construction and adjusted by any Change Order issued pursuant to the Contract Documents.

Section 1.15. Contractor.
"The Contractor" shall mean the entity that has entered into the Agreement for Construction of the Work with the District. The Contractor is required by law to be licensed and will perform work or render services as a prime contractor in or about the construction of the Work.

Section 1.16. Date of Commencement.
"Date of Commencement" is the date established in the Notice to Proceed.

Section 1.17. Date of Completion.
The "Date of Completion" for the purpose of determining when the Work is complete is the date certified by the District Representative when construction of the Work is 100% complete, including acceptance by the Architect of all punch list corrections.

Section 1.18. Day.
Unless otherwise expressly defined, a "day" shall mean a calendar day of 24 hours.

Section 1.19. Disabled Veteran Business Enterprise.
"Disabled Veteran Business Enterprise" or "DVBE" shall mean a business concern that is certified as a DVBE by the Department of General Services, Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS).

Section 1.20. District.
"District" shall mean the Sacramento City Unified School District, a California school district. The District is sometimes designated "Owner" in the Contract Documents.

Section 1.21. District Representative.
"District Representative" shall mean the District's designated agent engaged to perform all functions delegated to the District Representative by the Contract Documents. The District Representative may or may not be a construction manager. The District Representative will be the Contractor's primary contact during construction of the Project.

Section 1.22. Division of the State Architect.
"Division of the State Architect" or "DSA" is the California State agency responsible for checking contract documents for compliance with Title 24, California Code of Regulations, and monitoring compliance on the construction site.

Section 1.23. Equal (as in "or equal").
"Equal" shall mean a system, process, product or material which is similar in all respects to that shown or specified but produced by a manufacturer not listed in the specification.

Section 1.24. Interpretations.
"Interpretations" are all clarifications, additional instructions, and explanations issued by the Architect after award of the Contract.

Section 1.25. Materials and Equipment.
"Materials" is a generic term which shall include all building materials, articles, supplies, and equipment delivered to the project for incorporation in the Work. "Materials" includes everything incorporated into the Work except labor, unless otherwise noted.

"Equipment" shall mean all pre-manufactured or partially preassembled products or components, assembled or partially assembled before delivery to the Site.

Section 1.26. Notice to Proceed.
"Notice to Proceed" is the notice given to the Contractor following execution of the Agreement for Construction and receipt of all required preconstruction submittals as itemized in the Notice of Intent to Award. The Notice to Proceed establishes the start of the Work and authorizes the Contractor to begin construction.

Section 1.27. Project.
"Project" shall mean the total design and construction of the work of improvement described in the Contract Documents, of which the Work may be the whole or a part and which may include construction by District or by separate contractors.

Section 1.28. Project Inspector.
The "Project Inspector" shall mean the person or persons employed or engaged as (an) independent contractor(s) by the District to inspect the performance of the Work by the Contractor for compliance with the Contract Documents. The Project Inspector is hereby designated as an agent of the District for such purpose and no other. The Project Inspector is supervised by, and reports to, the Architect. The authority of the Project Inspector to monitor the work shall be strictly limited to that authority specified herein and in Title 24, California Code of Regulations, and no additional authority has been granted nor shall be inferred.

Section 1.29. Project Labor Agreement (or "PLA").
A prehire collective bargaining agreement in accordance with Public Contract Code section 2500 et seq. that establishes terms and conditions of employment for a specific construction project or projects and/or is an agreement described in Section 158(f) of Title 29 of the United States Code.

Section 1.30. Project Management Information System (PMIS).
The District owned, web based, software platform equipped with a suite of applications to manage data, generate reports, schedule tasks, allocate resources, assign responsibilities, and streamline workflows throughout the project lifecycle.

Section 1.31. Proposed Change Order/Work Order.
A "Proposed Change Order/Work Order" or "PCO" is the name given to a document issued by the Contractor proposing a change to the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. A PCO shall be used by the Contractor to respond to a Request for Proposal, a Request for Information, or an Architect's Instructional Bulletin. A PCO is not effective to authorize the proposed change to the Work, to the Contract Sum or to the Contract Time unless it is accepted in writing by the District.

Section 1.32. Reference to Codes.
Unless otherwise noted, all references to statutes are to the laws of the State of California and/or of the United States as codified in the various specified codes.

Section 1.33. Request for Information.
"Request for Information" or "RFI" is the name given to a document issued by the Contractor seeking clarification and/or additional information regarding an aspect of the Work. The response to the RFI does not constitute authorization or direction to proceed with any changed or additional work. Changed or additional work must be separately authorized by the District.

1. Should the Contractor require clarification or additional information of the Contract Documents, the Contractor will direct the request to the District Representative through the RFI Application within the District's PMIS.

2. RFIs shall be submitted to the District Representative through the District's PMIS. The Contractor shall describe on the RFI the problem or clarification being requested. The description provided should be complete and adequate to permit a written response without additional communications with the Contractor. The Contractor shall attach any related information or correspondence that may have been received from Subcontractors or vendors on the subject. In instances where the Contractor believes there may be a conflict between elements of the plans and specifications, the Contractor should identify the conflict and indicate the manner in which it interprets the Contract Documents.

3. The District Representative will review the request and take one or more of the following steps:
   a. Return the request to the Contractor for additional information.
   b. Forward the request to the Architect for response, copying the Project Inspector.
   c. Provide response and return to the Contractor with copies to the Architect and Project Inspector.

4. The Architect or other appropriate party receiving the RFI, will attempt to provide a response to the District Representative within seven (7) calendar days of receipt. The District Representative will in turn review the response and forward it to the Contractor. Should the response to an RFI be required by a specific critical date the Contractor shall indicate that date on the RFI.

5. If the Architect's review indicates a change or revision is necessary to the Contract Documents, the Architect will prepare the appropriate drawings and/or specifications required to define the change or revision and obtain DSA approval, if necessary. These documents will be transmitted to the District Representative for review and incorporation into the Contract Documents. The District Representative will transmit the revised documents to the Contractor.

6. If the Contractor believes the clarification or direction provided by the response to the RFI will impact the cost or schedule of the Project, the Contractor shall provide prompt notification to the District Representative, according to the General Conditions. After consultation with the Architect, the District Representative may prepare a Request for Proposal, PCO/Work Order, and/or Change Order.

Section 1.34. Request for Proposal.
A "Request for Proposal" or "RFP" is the name given to a document issued by the District Representative requesting pricing information and/or an adjustment in Contract Time for a described scope of work. An RFP is not a Change Order, a Directive, or a direction to proceed with the scope of work described in the RFP. The Contractor's response to the RFP shall be in the form of a Proposed Change Order.

Section 1.35. Samples.
"Samples" shall mean physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

Section 1.36. Shop Drawings.
"Shop Drawings" shall mean drawings, diagrams, schedules and other data specifically prepared by the Contractor or any subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

Section 1.37. Site.
"Site" is the area within which the Project is to be constructed and may include a laydown area or other area for use by Contractor in connection with the Contractor's Work.

Section 1.38. Special Provisions.
The "Special Provisions" are specific clauses setting forth conditions or requirements peculiar to the Work, and supplementary to the General Conditions and Technical Specifications.

Section 1.39. Specifications.
"Specifications" include the Special Provisions, these General Conditions, general requirements and technical specifications applicable to the Work as they may be modified by duly executed and issued pre-bid addenda, interpretations, and other modifications approved by the District pursuant to a Change Order.

Section 1.40. Subcontractor.
"Subcontractor" shall mean each person or firm who is required by law to be and who is licensed to and will perform work, labor, or render services to the Contractor in or about the construction of the Work, or who, under subcontract to the Contractor, fabricates and installs a portion of the work or improvement.

Section 1.41. Submittal.
"Submittal" shall mean all product data, shop drawings, manufacturers' instructions, samples, substitution requests, and all other submissions that the Contractor is required to provide to the District and/or the Architect.

Section 1.42. Substitution.
"Substitution" shall mean a request to approve a system, process, product, or material similar in form or function and equal in quality and performance to that shown or specified, but differing in some element, e.g., manufacturer, chemical composition, mechanism of action, surface finish, dimensions, durability, or other requirements.

Section 1.43. Work.
The "Work" shall mean that scope of work to be performed by the Contractor, including all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill its obligations. The Work may constitute the whole or a part of the Project.

ARTICLE 2. CONTRACT DOCUMENTS

Section 2.01. The Contract.
The Contract Documents form the Contract for Construction. This Contract represents the entire and integrated agreement between the District and the Contractor and supersedes all prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Change Order. Nothing contained in the Contract Documents shall create any contractual relationship between the District, the District Representative, or the Architect and any Subcontractor or sub-subcontractor, or between the District Representative or the Architect and the Contractor.

Section 2.02. General Intent of Contract Documents.
It is the overriding intent of the Contract Documents that the work performed shall result in a complete and operable project in satisfactory condition for occupancy, with all mechanical equipment in functional operating condition and fit for the use for which it is intended, and which complies in all respects with the Contract Documents. No extra compensation will be allowed for anything omitted but fairly implied to be included in the Contract Documents. The prices paid for the various items in the bid shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all items necessary to complete the Work as provided by the Contract Documents.

Section 2.03. Labor and Materials.
Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, light, heat, utilities, transportation and other facilities and services necessary for the execution and completion of the Work in accordance with the Contract Documents and any applicable code or statute, whether or not specifically described herein, as long as same is reasonably inferable there from as being necessary to produce the intended results, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work.

Section 2.04. Complementary Feature of Various Parts of Contract Documents.
The Contract Documents, including the Specifications and Plans and Drawings, are complementary and what is called for by any one shall be as binding as if called for by all. In case of conflict, large scale (detail) Drawings shall govern over small-scale Drawings, the Specifications shall govern over both the Construction Administrative Procedures Manual and the Contract Drawings except as noted below, special provisions shall govern over both the Contract Drawings and the general conditions, and subsequent addenda, Interpretations, or approved change orders shall govern over the original documents, unless a different order of precedence is noted elsewhere in conjunction with a specific portion of the documents.

In case of conflict between the Drawings and Specifications, the Drawings shall govern in matters of quantity and size, the Specifications in matters of quality. In case of conflict within the Drawings involving quantities or within the Specifications involving quality, the greater quantity and the higher quality shall be provided.

Where on any Drawing a portion of the Work is drawn out and the remainder is indicated in outline, the drawn-out parts shall apply to all other like portions of the Work. Where ornament or other detail is indicated as starting, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to other similar parts in the Work, unless otherwise indicated.

Scale drawings, full-size details, and specifications are intended to be fully coordinated and to agree. Where not specifically stated otherwise, all work and materials necessary for each unit of construction, even though only briefly mentioned or indicated, shall be furnished and installed fully and completely, including, but not limited to, the manufacturer's instructions and/or recommendations, as part of this Contract.

Any material specified by reference to the number, symbol, or title of a specified standard such as a Commercial Standard, a Federal Specification, a trade association standard, or other similar standards, shall comply with the requirements in the latest approved revision thereof and any amendments or supplements thereto in effect on the date of Notice to Bidders, except as limited to type, class, or grade, or modified in such reference. The standards referred to, except as modified in the Specifications, shall have full force and effect as though printed in these Specifications.

Section 2.05. Ownership and Use of Documents.
All original Drawings and Specifications prepared by the Architect are and shall remain the property of the District.

Section 2.06. Successors and Assigns.
The District and the Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract or sublet it in whole or part without the written consent of the District, which consent is granted for Subcontractors listed in Contractor's Bid for the portion of Work for which they were listed, nor shall the Contractor assign any moneys due or to become due to it hereunder without the prior written consent of the District.

Section 2.07. Written Notice.
Written notice may be accomplished by personal delivery, overnight mail, or delivery receipt email with a copy by U.S. Mail. The written notice shall become effective upon delivery. Delivery is complete when the notice is hand delivered to Contractor's home office, job-site office, or to Contractor's superintendent; or one business day after mailing by overnight mail; or upon actual delivery as evidenced by a delivery receipt.

Section 2.08. Rights and Remedies.
The duties and obligations of the Contractor imposed by the Contract Documents and the rights and remedies of the District available there under shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

The failure of the District, the District Representative, the Project Inspector or the Architect to insist in any one or more instances upon the strict performance of any one or more of the provisions of this Contract or to exercise any right herein contained or provided by law, shall not be construed as a waiver or relinquishment of the performance of such provision or right(s) or of the right to subsequently demand such strict performance or exercise such right(s) and the rights shall continue unchanged and remain in full force and effect.

The Contractor agrees that it can be adequately compensated by money damages for any breach of this Contract which may be committed by the District and hereby agrees that no default, act, or omission of the District, the District Representative, the Project Inspector, or the Architect, shall constitute a material breach of the Contract entitling the Contractor to cancel or rescind the provisions of the Contract or to suspend or abandon performance of all or any part of the Work. **The Contractor hereby waives any and all rights and remedies to which it might otherwise be or become entitled, saving only its right to money damages.**

Section 2.09. Unenforceability of any Clause.
If any clause or provision of the Contract Documents is held to be unenforceable or invalid, then that provision of the Contract shall be stricken and the remaining portion shall remain in full force and effect.

ARTICLE 3. BONDS AND BONDING; INDEMNIFICATION AND INSURANCE

Section 3.01. Bonds: Time to Submit.
Within ten (10) days after receipt of Notice of Intent to Award, and before the District will execute the Agreement for Construction, the Contractor to whom the Work is awarded shall furnish and deliver to the District bonds as set forth below in Sections 3.03, 3.04 and 3.05, except that contracts for amounts less than $25,000 will not be required to be accompanied by bonds.

Section 3.02. Qualifications of Surety.
All bonds shall be duly executed by a responsible corporate surety listed in the current version of the United States Department of the Treasury circular entitled "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies," admitted by the State of California Department of Insurance to do business in the State of California and acceptable to District.

Section 3.03. Performance Bond.
The Contractor shall submit a faithful Performance Bond in substantially the form provided with the Contract Documents, conditioned upon the faithful performance by the Contractor of all requirements of the Contract Documents, and in an amount of no less than one hundred percent (100%) of the total Contract Sum.

Section 3.04. Labor and Materials Payment Bond.
The Contractor shall also submit a payment bond in substantially the form provided with the Contract Documents, which in all respects complies with California Civil Code sections 9550, 9552, and 9554 ("Payment Bond"), in an amount of no less than one hundred percent (100%) of the Contract Sum.

Section 3.05. Not Used.

Section 3.06. Additional Bonding Requirements.
All bonds submitted shall include the following:

1. Full name and address of the Contractor, Surety, and District
2. Contract Date
3. Exact Contract Sum
4. Bid package number.
5. Signature of the Contractor
6. Signature of authorized Surety representative.
7. Notarization of the Contractor and Surety
8. Power of Attorney
9. Local contact for Surety, with name, phone number, and address to which legal notices may be sent

Section 3.07. Bond Costs in Bids.
All costs for applicable Payment Bonds and Performance Bonds shall be included in the Bid amount, and shall be included in the base bid if bid alternates are used.

Section 3.08. Indemnification.
To the fullest extent permitted by law, the Contractor shall defend with counsel acceptable to the District, indemnify and save harmless the District, the District Representative, and the Architect and any of their respective officers, agents, and employees ("Indemnified Parties") from and against, any and all losses, claims, demands, damages, costs, expenses, attorney's fees, or liability of every nature arising out of or in any way connected with the performance or attempted performance of the provisions hereof, or in any way arising out of or connected with this Contract, including but not limited to, equitable relief, stop notice actions, or any acts or omissions, any wrongful act, or any negligent act or omission to act, whether active or passive, on the part of the Contractor or any of its agents, employees, independent contractors, subcontractors or suppliers; provided, further, without limiting the foregoing, that the defense and indemnity is intended to apply to any wrongful acts, or any actively or passively negligent acts or omissions to act, committed jointly or concurrently by the Contractor and the Contractor's agents, employees, independent contractors, or subcontractors or suppliers, and the District, its agents, employees, or independent contractors. Nothing contained in the foregoing indemnity provisions shall be construed to require the Contractor to

indemnify any of the Indemnified Parties in contravention of Section 2782 of the Civil Code for the active or sole negligence or willful misconduct of the District.

To the fullest extent permitted by law, the Contractor's duty to defend shall extend, without limitation, to any suit or action founded upon any losses, claims, demands, damages, costs, expenses, attorney's fees, or liability of every nature arising out of or in any way connected with the performance or attempted performance of the provisions hereof, or in any way arising out of or connected with this Contract.

The defense and indemnity obligations expressly extend to and include any and all claims, demands, damages, costs, expenses, or liability occasioned as a result of damages to adjacent property caused by the conduct of the Work.

The defense and indemnity obligations expressly extend to and include any and all claims, demands, damages, costs, expenses, or liability occasioned as a result of the violation by the Contractor, the Contractor's agents, employees, or independent contractors, subcontractors of any level, or suppliers of any provisions of federal, state or local law, including applicable administrative regulations.

The defense and indemnity obligations also expressly extend to and include any claims, demands, damages, costs, expenses, or liability occasioned by injury to or death of any person, or any property damage to property owned by any person while on or about the Site or as a result of the Work, whether such persons are on or about the Site by right or not, whenever the Work is alleged to have been a contributing cause in any degree whatsoever.

In claims against any person or entity herein indemnified that are made by an employee of the Contractor or an employee of any of the Contractor's agents, independent contractors, subcontractors or suppliers, a person indirectly employed by the Contractor or by any of the Contractor's agents, independent contractors, subcontractors or suppliers, or anyone for whose acts the Contractor or any of the Contractor's agents, independent contractors, subcontractors of any level, or suppliers may be liable, the defense and/or indemnification obligation herein shall not be limited by any limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or the Contractor's agents, independent contractors, subcontractors of any level, or suppliers under workers' compensation acts, disability acts, or other employee benefit acts.

The defense and indemnification obligations herein shall not be limited by any assertion or finding that the person or entity indemnified is liable by reason of a non-delegable duty.

The defense and indemnities set forth herein shall not be limited by the insurance requirements set forth in the Contract Documents.

The defense and indemnification requirements herein set forth shall extend to claims occurring after this Contract is terminated as well as while it is in force.

Section 3.09. Indemnification of Adjacent Property Owners.
In the event the Contractor enters any agreement with the owners of any adjacent property to enter upon or adjacent to such property for the purpose of performing this Contract, the Contractor shall fully indemnify, defend, and save harmless such person, firm, corporation, or state or other governmental agency which owns or has any interest in the adjacent property. The form and content of the indemnification agreement shall be approved by the District prior to commencement of any work on or about such property. These provisions shall be in addition to any other requirements of the owners of adjacent property.

Section 3.10. Insurance.

The Contractor shall obtain and maintain, at its sole cost and expense, all insurance required by Sections 3.13 through 3.15. The required insurance shall be maintained by Contractor in full force and effect at all times during prosecution of the Work and, with the exception of Builder's Risk, for two (2) years after the final completion and acceptance thereof by District. Certificates of such insurance and copies of the insurance policies and required endorsements, including but not limited to Additional Insured Endorsements and Waivers of Subrogation in favor of District, the Architect, the Construction Manager, and any other District consultants and their officers, directors, agents, employees, and volunteers ("Additional Insureds"), shall be delivered to the District within ten (10) days of the Notice of Intent to Award the Contract, and before execution of the Agreement for Construction by the District. Insurance Certificates must

indicate Bid Package number and school name. If District requests copies of any insurance policy, Contractor agrees to provide certified copies within thirty (30) days of the District's request.

Every policy shall be endorsed to state that it shall not be assigned, canceled, or materially reduced in coverage without thirty (30) days' prior written notice to District, or ten (10) days' written notice for non-payment of premium. The required insurance shall be with carriers and on forms acceptable to the District and shall be subject to the approval of the District.

Failure of Contractor to maintain all required insurance during the entire Contract Time shall constitute a default entitling the District to all rights and remedies that exist in the Contract Documents and/or by law.

The requirements as to the types and limits of insurance coverage, and any approval of said insurance by the District, is not intended and shall not in any manner limit or qualify the liabilities and obligations pursuant to this Agreement.

Section 3.11. Subcontractor's Insurance.
The Contractor shall not allow any Subcontractor to commence work on its subcontract until the Subcontractor has provided the insurance specified below. The Contractor shall require each of its Subcontractors to procure and to maintain, during the life of the subcontract and for two (2) years after completion of the Project, bodily and personal injury liability and property damage insurance, and workers' compensation insurance, of the type and in the same amount as specified herein, including, without limitation, the requirement that the Subcontractor's policy shall be endorsed (1) to include by name the Additional Insureds and shall provide that they are primary, with any insurance maintained by District as non-contributory and will have severability of interest endorsement, and (2) to waive all rights of subrogation against the Additional Insureds for losses arising from work performed by the Contractor for the District .

Should any subcontractor's work include any elements that may give rise to a pollution claim, the subcontractor shall be required to carry Pollution Liability coverage with limits of at least $2,000,000 per pollution event. The District may require higher limits by written request. The policy shall be endorsed to include by name the Additional Insureds as additional insureds and shall include a waiver of subrogation endorsement in favor of the Additional Insureds.

Should any Subcontractor maintain broader coverage and/or limits than those required herein, those limits/coverages shall be made available to the District. Upon written request by Contractor on behalf of any identified subcontractor(s), the District may, in its sole and absolute discretion, agree in writing to CGL limits for the identified subcontractor(s) that are half of that required from the Contractor.

Contractor shall not allow any subcontractor to commence work until the subcontractor has provided Contractor with a signed statement acknowledging compliance with Section 3700 of the Labor Code, as required in Section 3.13.

It shall be the responsibility of the Contractor to ensure that all subcontractors comply with all insurance requirements, and to verify their compliance when requested by the District.

If requested by the District, the Contractor shall deliver certificates of insurance or copies of the insurance policies and endorsements of all Subcontractors; provided, however, that this authority shall not relieve the Contractor of its obligation to ascertain the existence of such insurance.

Section 3.12. Not Used.

Section 3.13. Workers' Compensation and Employers' Liability Insurance.
In accordance with the provisions of Section 3700 of the Labor Code, the Contractor, and each subcontractor, shall secure the payment of compensation to its employees. The Contractor and each subcontractor shall provide workers' compensation insurance and occupational disease insurance as required by law and employers liability insurance with minimum limits of $1,000,000 covering all workplaces involved in the Contract Documents.

The Contractor shall sign and file with the District the following certificate on the form provided by the District:

> I am aware of the provisions of Section 3700 of the Labor Code 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 provisions before commencing the performance of the work of this Contract.

The Contractor shall require each subcontractor to file such statement prior to allowing that subcontractor to commence work.

The Contractor shall furnish a certificate of insurance or a certificate of permission to self-insure under the Workers' Compensation and Employers' Liability Insurance statutes of the State of California. The certificate shall provide that at least thirty (30) days' prior written notice shall be served on District prior to the cancellation or change of such insurance or self-insurance. Said certificate shall also provide that the insurer shall waive all rights of subrogation against the Additional Insureds for losses arising from work performed by the Contractor for the District. Such insurance shall be delivered to the District Representative within ten (10) days of being notified of the intent to award the Contract, and before the District will execute the Agreement for Construction.

Section 3.14. Liability Insurance.
Insurance is to be placed with insurers approved by the State of California Department of Insurance and with a Bests' rating of no less than (A-) Level VII.

A. The Contractor and its Subcontractors shall procure and maintain insurance on all of their operations during the progress of the Work, with reliable insurance companies, on forms acceptable to District, for the following minimum insurance coverages:

1. **Commercial General Liability**: Occurrence form insurance policy (ISO CG 00 01 or equivalent) covering all operations by or on behalf of Contractor, not excluding coverage for:
   a. Premises and Operations
   b. Products and Completed Operations
   c. Contractual Liability insuring the obligations assumed by the Contractor in this Agreement or Blanket Contractual Liability Coverage
   d. Broad Form Property Damage (including Completed Operations)
   e. Explosion, Collapse, Subsidence, and Underground Hazards
   f. Personal Injury Liability

   Commercial General Liability Limits shall not be less than:
   $2,000,000 Each Occurrence (Combined Single Limit for Bodily Injury & Property Damage)
   $2,000,000 Personal Injury Liability Each Occurrence
   $4,000,000 Aggregate for Products and Completed Operations
   $4,000,000 General Aggregate

   The required General Liability limits must be present on the primary General Liability policy and cannot be met with Excess Liability limits.

2. **Commercial Automobile Liability**: Insurance policy (ISO CA 00 01 or equivalent) covering Bodily Injury, Property Damage, and Contractual Liability coverage for "Any Auto" (Symbol 1) which includes coverage for all owned, hired, borrowed, and non-owned automobile, trailer, and equipment with combined bodily injury and property damage liability of not less than $1,000,000.

3. **Pollution Liability:** Should the scope of work include any elements that may give rise to a pollution claim, the Contractor shall be required to carry Pollution Liability coverage with limits of at least $5,000,000. The District may require higher limits by written request. The policy shall be endorsed to include by name the Additional Insureds as additional insureds and shall include a waiver of subrogation endorsement in favor of the Additional Insureds.

4. Additional coverages and/or limits may be required in the Special Provisions, Section 00 73 00. If the Special Provisions require limits of general liability and automobile liability insurance exceeding those stated above, the Contractor shall carry excess or umbrella liability insurance providing excess coverage at least as broad as the underlying coverage with a limit equal to the amount stated in the Special Provisions per occurrence and aggregate.

5. Any excess liability coverage used to supplement the general and automobile liability must either (1) be from the same carrier as the primary insurance, or (2) include the policy statement wherein it describes what the underlying primary coverage must be before the excess liability coverage takes effect.

B. The following terms shall be included in the General Liability and Auto Liability insurance, either within the policy or by endorsement:

1. All policies shall be endorsed to include by name the Additional Insureds and shall provide that they are primary with any insurance, self-insurance, or Memorandum of Liability Coverage maintained by District as non-contributory. Such policies will have severability of interest endorsement.

2. Except with respect to bodily injury and property damage included within the Products and Completed Operations hazards, the aggregate limit established under Section 3.14 shall apply separately to the Contractor's Work under this agreement. All liability insurance shall be written on an occurrence basis. "Modified Occurrence" and "Sunset" type clauses are not acceptable.

3. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Additional Insureds.

4. General Liability Coverage shall state that the Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability, and shall contain a severability of interest/cross liability clause to the effect that each Insured and Additional Insured is covered as if separate policies had been issued to each.

5. Each insurer(s) issuing the required policies shall, by policy provisions or by separate endorsement, agree to waive all rights of subrogation against the Additional Insureds for losses arising from work performed by the Contractor for the District. The General Liability waiver of subrogation must apply to Ongoing Operations as well as Completed Operations.

6. The policy(ies) shall provide, by policy provisions or endorsement, that it is primary insurance and that any insurance or self-insurance fund maintained by or available to the Additional Insureds shall be in excess of the Contractor's insurance and shall not be called upon to contribute to a loss covered by the policy.

7. The policy(ies) must provide, by policy provisions or endorsement, that it shall not be canceled, suspended, voided, or materially changed, nor may the "retroactive date" of the policy or any renewal or replacement policy be changed, without thirty (30) days' prior written notice to the District (ten [10] days for non-payment of premium). The standard cancellation clause on the certificate shall read:

   Should any of the above-described policies be canceled before the expiration date thereof, the issuing company will mail 30 days written notice to the certificate holder.

8. The contractual liability coverage may be either on a blanket basis or a policy which specifically identifies this Agreement with a contractual liability endorsement.

9. Any deductibles or self-insured retentions must be declared to and approved by the District; the District generally will not approve deductibles or self-insured retentions greater than $50,000. Any and all deductibles or self-insurance retentions in the above-described liability insurance policies shall be assumed by and be for the account of, and at the sole risk of the Contractor.

10. All policies and endorsements are subject to approval at the sole discretion of the District. Endorsements with expiration dates will not be accepted.

Section 3.15. Builder's Risk Insurance.
The Contractor shall, at its sole expense, purchase, maintain, and keep in force at all times during the term of the Contract and until the date of transfer of the insurable interest to and acceptance by the District, a Builder's Risk/Installation Floater policy (Property Insurance). Such insurance shall protect the District, the Contractor,

Subcontractors, sub-subcontractors, and material suppliers at every tier, as their interests may appear, from loss or damage to work in the course of construction. Property insurance shall be on a "Special Form" or equivalent policy and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, flood, windstorm, falsework, mechanical breakdown or electrical damage including testing and startup, magnetic disturbance, changes in temperature or humidity, temporary buildings, loss that ensues from defective material or workmanship, explosion, and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the District's Representative's, District Architect's, Construction Manager's, other District Consultants' and Contractor's services and expenses required as a result of such insured loss in the amount of one hundred percent (100%) of the replacement cost of the Project. In addition there shall be coverage in the amount of twenty percent (20%) of the replacement cost for Extra Expense and Loss of Use and thirty percent (30%) of the replacement cost for Soft Costs coverage. Unless expressly required in the Special Provisions, Property Insurance **shall not** include coverage for earthquake or other losses caused by "Acts of God," as defined by California Public Contract Code section 7105.

A. The following terms shall apply to such coverage:

1. Coverage shall be written on a completed value, non-reporting form, on a replacement cost basis, and shall cover the property against all risks of physical loss or damage identified above.

2. The property covered shall include the Work, including any materials, equipment, or other items to be incorporated therein while the same are located at the construction site, with reasonable sub-limits for materials stored offsite or while in transit. The policy shall contain a provision that Contractor and the District are Named Insureds under this policy and that the Subcontractors, sub-Subcontractors, and Material Suppliers at every tier are Named Insureds or Additional Insureds as their interest may appear. A loss insured under the Builder's Risk/Installation Floater policy shall be adjusted by Contractor as fiduciary and made payable to Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause. Contractor shall pay subcontractors their just shares of insurance proceeds received by Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to make payments to their sub-subcontractors in similar manner.

3. When stated in the Special Provisions (Section 00 73 00), Builder's Risk insurance shall include Delay in Opening coverage with limits of liability, and for the period of time, as set forth in the Special Provisions. Coverage shall include interest and/or principal payments that become due and payable by the District upon completion of construction or other date as set forth in the Special Provisions, debt service, expense, loss of earnings or rental income or other loss incurred by the District, without deduction, due to the failure of the Project being completed on schedule.

4. The policy shall be endorsed to name the District as an additional payee.

5. The maximum deductible under this policy shall be one hundred thousand dollars ($100,000). All deductibles shall be borne solely by Contractor, and the District shall not be responsible to pay any deductible in whole or in part.

B. If not covered by Builder's Risk insurance or any other property or equipment insurance required by the Contract Documents, the Contractor shall, at its sole expense, purchase, maintain and keep in force at all times during the term of the Contract property insurance (equal to one hundred percent (100%) of the contract value) for portions of the Contractor's work and/or equipment to be incorporated therein stored offsite or in transit.

C. The insurer shall, by separate endorsement or policy provisions, agree to waive all rights of subrogation against the District, the Additional Insureds, the Contractor, Subcontractors, sub-Subcontractors, and material suppliers at every tier for losses covered by the policy. If the policies of insurance referred to in this Section require an endorsement or consent of the insurance company to provide for continued coverage where there is a waiver of subrogation, the owners of such policies will cause them to be so endorsed to obtain such consent.

D. Contractor shall provide a copy of the Builder's Risk/Installation Floater policy to the District for approval.

E. The District shall maintain in effect during the time for performance under the Contract Documents property insurance, including the perils of fire and flood on all pre-existing utilities, buildings, structures, paving, and equipment on the Site.

ARTICLE 4. PERMITS, LICENSES, ORDINANCES, AND REGULATIONS

Section 4.01. Basic Standard.
The Contractor shall conduct the Work so that all laws and ordinances for the protection of the public and the workers shall be obeyed fully both by the Contractor and by all subcontractors on the Site.

The Contractor shall comply with the requirements of the California State Licensing Board and have a valid contractor's license which is to be active as to the date of the receipt of bids and maintained in "Good Standing" from the receipt of bids throughout the Project.

The Contractor, and any subcontractor of any level, shall be registered pursuant to Labor Code section 1725.5 prior to engaging in the performance of any Work, and shall maintain current registration throughout the term of this Contract.

Section 4.02. Permits.
The District will pay all fees required by the Division of the State Architect, Department of General Services, State of California. The District will reimburse the Contractor for utility connection fees, encroachment permits, and utility service charges other than temporary utility charges, unless otherwise indicated, that are necessary for the completion of the Work. All other fees and permits shall be at the expense of the Contractor. Proper documentation of fee, permit, and utility service charges shall be submitted to the District through the District Representative. No mark-up shall be allowed the Contractor on these reimbursable charges.

The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations, or orders of any public authority bearing on the performance of the Work.

Except as provided above, the District shall secure and pay for necessary approvals, easements, assessments, and charges required for the construction, use, or occupancy of permanent structures or for permanent changes in existing facilities.

Section 4.03. Compliance with Laws and Regulations.
The Contractor shall keep itself fully informed of and shall observe and comply with, and shall cause any and all subcontractors employed by it or under it to observe and comply with all federal and state laws, and county or municipal ordinances, regulations, orders, and decrees which in any manner affect those engaged or employed on the Work, or the materials used in the Work, or in any way affect the conduct of the Work.

All work shall be performed in accordance with the rules and regulations, Title 24, Parts 1-5 and 9, California Code of Regulations, and Division of the State Architect, and a copy shall be kept on the job at all times during construction.

ARTICLE 5. INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

Section 5.01. Familiarity with Project Site Conditions and Contract Documents.
By submitting its Bid, Contractor represented that it had visited the Site, was satisfied as to the nature and location of the Work, was satisfied as to the character, quality and quantity of the Work, had become familiar with the local conditions under which the Work is to be performed, had made whatever contact and investigation with utility companies that it deemed necessary, and had correlated its Site observations with the requirements of the Contract Documents. Failure to visit the Site does not relieve the Contractor of responsibility for observing and considering those conditions which a qualified contractor would have observed.

Section 5.02. Subsurface Conditions.
Where investigations of subsurface conditions have been made by or on behalf of the District with respect to subsurface conditions, utilities, foundations, or other structural designs, and that information is shown on the Drawings or Plans, it represents only a statement by the District as to the character of the materials which have been encountered by the District's investigation. If provided during bidding, this information was only included for the convenience of bidders, including the Contractor.

Investigations of subsurface conditions are made for the purpose of design only. The District assumes no responsibility with respect to the sufficiency or accuracy of borings or of the log of test borings or other preliminary investigations or of the interpretation thereof. There is no guaranty, express or implied, that the conditions indicated are representative of those existing throughout the Project or the Work, or any part of the Project or the Work, or that unanticipated conditions may not occur. When a log of test borings, soils studies, and/or any other report of subsurface conditions is included with the Drawings or Plans, it is expressly understood that such log, soils studies, and/or report of subsurface conditions does not constitute a part of the Contract Documents, represents only an opinion of the District as to the character of the materials to be encountered, and is included in the Drawings or Plans only for the convenience of bidders, including the Contractor. Making such information available to bidders, including Contractor, is not to be construed in any way as a waiver of the provisions of these General Conditions, and bidders, including Contractor, must satisfy themselves through their own investigations as to the conditions to be encountered.

Section 5.03. Sections of Drawings and Specifications.
For convenience, the specifications and drawings in the Contract Documents are arranged in several sections, but this separation shall not be considered as the limits of the work required of any separate trade. The scope of work is that indicated in Specification 00 73 00 Special Provisions, Article 1, Scope of Work. The terms and conditions of the work to be performed by any Subcontractor are strictly between the Contractor and the Subcontractor.

Section 5.04. Diagrammatic Drawings.
Drawings showing the locations of equipment, wiring, piping, etc., unless dimensioned, are diagrammatic, and conditions will not always permit their installation in the exact location shown. In such event, the Contractor shall submit an RFI and obtain a response before proceeding with the work in question. Unless there is a material increase in the Contractor's scope of work, installation as specified in the response to the RFI shall be without any additional compensation to the Contractor and without any increase in the Contract Time. Any work done after discovery of the issue, until authorization to proceed based on the response to the RFI, will be done at the Contractor's risk.

Section 5.05. Interpretation and Additional Instructions.
Should the Contractor discover any conflicts, omissions, or errors in the Contract Documents, or have any question concerning interpretation or clarification of the Contract Documents, or if it appears that the Work to be done or any matters relative thereto are not sufficiently detailed or explained in the Contract Documents, then, before proceeding with the work affected, the Contractor shall notify the District Representative in writing and request interpretation, clarification, or additional detailed instructions and/or drawings concerning the work. All such questions shall be resolved and instructions to the Contractor issued by the Architect.

Should the Contractor proceed with the work affected before receipt of instructions from the Architect, and, in the case of a change to the Work, before receipt of authorization to proceed, it shall remove and replace or adjust any work which is not in accordance therewith, and it shall be responsible for any resultant damage, defect, or added cost without an extension of the Contract Time or increase in the Contract Sum.

Section 5.06. Architect's Instruction Bulletins and Drawings.
In addition to the Drawings incorporated in the Contract Documents, the Architect, through the District Representative, may furnish such supplemental drawings or instructions from time to time as may be necessary to make clear or to define in greater detail the intent of the Contract Drawings and Specifications. In furnishing additional drawings or instructions, the Architect shall have the authority to make minor changes in the Work, not involving any extra cost, and not inconsistent with the overall design of the Project. If extra cost is known to be involved, these instructions will be accompanied by an RFP. These supplemental drawings and instructions shall become a part of the Contract Documents; the Contractor shall make its work conform to them.

Section 5.07. Notification of Disagreement Regarding Scope of Work.
If agreement cannot be reached as to cost, and the Contractor does not agree that work due to an interpretation or supplemental drawing or instruction is within the scope of the Contract Documents, the Contractor shall, within seven (7) days after receipt of the interpretation or instruction, submit a Proposed Change Order to the District Representative specifying in detail in what particulars the contract requirements were exceeded and the change in cost resulting therefrom. The District Representative shall then determine whether a Change Order shall be issued in accordance with Article 15 of these General Conditions. If the District Representative disagrees that a Change Order is appropriate, then, in its response to Contractor, the District Representative shall direct the Contractor in writing whether to proceed with the Work that the Contractor contends is changed. If so directed, Contractor shall perform such work without delay.

The time during which the District Representative is considering the Proposed Change Order shall not affect the Contract Time.

Section 5.08. As-Built Drawings and Specifications.
The Contractor shall maintain a PDF master set of red line Drawings and Specifications at the Site which shall be updated weekly to reflect current as-built conditions of the Work as the Work progresses. The information to be recorded by the Contractor will be determined by the Architect, who will be responsible for preparing the final, reproducible record drawings based upon the information submitted by the Contractor. The Contractor's as-built information shall be clear and legible, and at a minimum, the following information shall be inserted and dimensioned on those Drawings and Specifications, in RED, by the Contractor: the exact horizontal and vertical location of all installations in their finished condition, including all electrical, plumbing and mechanical installations; all changes in construction, materials, and installed equipment; posting of all issued addenda, Request for Information (RFI) signed by the Architect, and Architect's Instruction Bulletins with back-up to the bid documents in all applicable locations along with adequate dimensional data, both horizontal and vertical, to allow location of covered installations; the identification of each change authorized by Directive, and the number of that Directive. The updated drawings and specifications shall be available for review by the District Representative and the Inspector. If as-builts are marked up in PDF format, the file shall be made available on the District's PMIS.

Written confirmation from the Project Inspector that the as-builts have been properly updated weekly shall be submitted with each pay application request, and the existence of such properly updated as-builts shall be a condition precedent to payment. Failure to comply with the preparation and submission of as-builts may result in the District withholding the current progress payment.

As a condition to certification of final completion, the Contractor shall provide signed and dated original as-built drawings and specifications in a PDF color format, with a resolution of at least 600 DPI and each plan sheet and specification section bookmarked by name, number, or title, together with all additional information requested by the Architect to enable the Architect to prepare a set of final, reproducible as-built drawings and specifications. Timely submission of complete as-built documents shall be a condition precedent to certification of final completion and to final payment. Delays in the submission of complete as-built documents may subject the Contractor to liquidated damages.

ARTICLE 6. SUBCONTRACTOR LISTING AND SUBSTITUTION

Section 6.01. Subcontracting.
If the Contractor subcontracts any work to be performed or materials to be supplied pursuant to this agreement, the Contractor shall be as fully responsible to the District for the acts and/or omissions of such Subcontractor or supplier and of the persons either directly or indirectly employed or engaged as subcontractors by such Subcontractor or supplier as it is for its own acts and omissions.

The Contractor shall bind every Subcontractor or supplier, and every subcontractor of a Subcontractor, by the terms of the Contract Documents.

The Contractor shall cause each of its Subcontractors by contract to have an active contractor's license pertaining to its classification of work maintained in "good standing" from commencement of the Subcontractor's work through final completion of the Project.

All subcontractors shall be registered pursuant to Labor Code section 1725.5 prior to engaging in the performance of any Work and shall maintain current registration throughout the term of this Contract.

The Contractor shall not perform work on the Project with a Subcontractor who is ineligible to perform work on public works project pursuant to Labor Code sections 1777.1 or 1777.7.

Section 6.02. Disputes Between Subcontractors and/or the Contractor.
Contractor shall promptly take reasonable action to resolve any and all disputes with its subcontractors or suppliers at any level to ensure that such dispute does not interfere with the Work or the Project.

Section 6.03. Compliance With Listing of Subcontractors.
The Contractor shall comply with the requirements of the Subletting and Subcontracting Fair Practices Act, Public Contract Code Sections 4100 *et seq.* with respect to all listed Subcontractors and all DVBEs listed in Contractor's Bid. If the Contractor requests to substitute a listed DVBE, then the Contractor shall make all reasonable efforts to identify a DVBE as the replacement subcontractor or supplier. Violation any of the provisions of that statute is a material breach of this Contract and the District shall have all remedies provided by California law, including but not limited to those provided in Public Contract Code Section 4110, allowing termination of the Contract or a penalty assessment of up to ten percent (10%) of the subcontract amount.

In listing DVBE subcontractors and suppliers, the Contractor represented that the DVBE would perform a "Commercially Useful Function" ("CUF"). In the performance of the Work, the Contractor and any Subcontractor that contracts with a DVBE for which the Contractor claimed DVBE credit shall ensure that the DVBE: (a) is responsible for the execution of a distinct element of the Work; (b) actually performs, manages, and/or supervises the Work; (c) performs Work that is normal for its business services and functions; (d) for material suppliers, that the supplier negotiates price, determines quality and quantity, orders, installs (if applicable), and pays for the materials; and (e) does not further subcontract a portion of the Work greater than expected to be subcontracted by normal industry practices. A DVBE that is an extra participant in a transaction through which funds are passed to obtain the appearance of DVBE participation will not be considered to perform a CUF.

Section 6.04. Dealings with Subcontractors.
The District and its representatives will deal only with the Contractor, and the Contractor shall be responsible for the proper execution of the Work. Any and all discussions between any subcontractor or supplier and the District or any of its representatives shall be initiated through the Contractor or its representative.

Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor or supplier and the District or any of its representatives, nor shall this Contract be construed to be for the benefit of any subcontractor or supplier.

Section 6.04. Subcontractor List.
No later than ten (10) days following award of the Agreement, Contractor shall provide the District with a list of all subcontractors performing work on the Project, including their address, contractor license number, and DIR registration number, telephone number, email address, and contact person(s), regardless of subcontract amount and regardless of whether the subcontractor is under contract with the Contractor or under contract with a Subcontractor. At the same time, Contractor shall provide the District with a list of all known material suppliers. The list shall identify all subcontractors of any level and all suppliers that are DVBEs, and the Contractor shall provide the DGS DVBE certification number for all identified DVBEs. It shall be the Contractor's responsibility to notify the District of any additions or deletions to this subcontractor and supplier list from the commencement of the Work through final payment.

Section 6.05. Termination of Unsatisfactory Subcontractors.
When any portion of the Work that has been subcontracted by the Contractor is not being prosecuted in a satisfactory manner, or when materials supplied do not conform to the Contract Documents, and these deficiencies form the basis of a default notice issued pursuant to Article 16, the District may direct the Contractor to discharge the subcontractor or supplier. The District shall not be responsible for any added costs associated with such termination.

Any subcontractor or supplier which is discharged shall not again be employed on this Project.

Any termination of a Subcontractor pursuant to this Section shall be in strict conformity with the requirements of the Subletting and Subcontracting Fair Practices Act, Part 1 of Division 2 of the Public Contract Code, commencing with Section 4100.

Section 6.06. Payment of Subcontractors and Suppliers.
The Contractor shall make all payments to Subcontractors and suppliers as expeditiously and timely as possible, consistent with any applicable law so as to prevent any stop notices or claims from being filed against the District or the Project. Without limiting the generality of the foregoing, Contractor shall pay all undisputed amounts to Subcontractors and material suppliers within seven (7) days of receipt of payment by District.

ARTICLE 7. STATE REQUIREMENTS REGARDING WAGES, HOURS, AND EQUAL OPPORTUNITY

Section 7.01. Prevailing Wage Rate; Notice.
As provided under Labor Code Sections 1726-1861, the Director of the Department of Industrial Relations (DIR) of the State of California has determined the prevailing rate of wages in the locality in which the work on the project is to be performed for each craft, classification, or type of worker needed to execute this Contract. The prevailing rates so determined are on file with the District, and they are available for public inspection. They may also be obtained on the internet at http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm. Those prevailing wage rates hereby are incorporated in this agreement and made a part hereof.

The Contractor shall obtain and post copies of these prevailing wage rates in a prominent place at the job site, in accordance with the regulations of the Department of Industrial Relations.

The Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The Contractor shall post on the jobsite a Notice containing the following language:

> This public works project is subject to monitoring and investigative activities by the Department of Industrial Relations ("DIR"), State of California. This Notice is intended to provide information to all workers employed in the execution of the contract for public work and to all contractors and other persons having access to the job site to enable the DIR to ensure compliance with and enforcement of prevailing wage laws on public works projects.
>
> The prevailing wage laws require that all workers be paid at least the minimum hourly wage as determined by the Director of Industrial Relations for the specific classification (or type of work) performed by workers on the project. These rates are listed on a separate job site posting of minimum prevailing rates required to be maintained by the public entity which awarded the public works contract. Complaints concerning nonpayment of the required minimum wage rates to workers on this project may be filed with the DIR at any office of the Division of Labor Standards Enforcement ("DLSE").
> Local Office Telephone Number: 916-263-1811
>
> Complaints should be filed in writing immediately upon discovery of any violations of the prevailing wage laws due to the short period of time following the completion of the Project that the DIR may take legal action against those responsible.
>
> Complaints should contain details about the violations alleged (for example, wrong rate paid, not all hours paid, overtime rate not paid for hours worked in excess of 8 per day or 40 per week, etc) as well as the name of the employer, the public entity which awarded the public works contract, and the location and name of the project.
>
> For general information concerning the prevailing wage laws and how to file a complaint concerning any violation of these prevailing wage laws, you may contact any DLSE office. Complaint forms are also available at the DIR website found at:
> www.dir.ca.gov/dlse/PublicWorks.html.

Section 7.02. Payment of Prevailing Wage Rates.
Pursuant to Labor Code Section 1772, workers employed by contractors or subcontractors in the execution of any contract for public work are deemed to be employed upon public work as defined in Labor Code Sections 1720-1725. Therefore, the Contractor shall pay, and shall cause all subcontractors, whether under contract with the Contractor or under contract with any Subcontractor, to pay not less than the specified prevailing wage rates to all workers employed in the execution of this Contract.

In accordance with Labor Code Section 1775, the Contractor shall monitor the payment of the specified general prevailing rate of per diem wages by subcontractors to employees by periodic review of the certified payrolls of the subcontractors.

Section 7.03. Wage Rate for Crafts Not Listed.
The responsibility to check prevailing wage rates is the Contractor's. Pursuant to Labor Code Section 1773, the Contractor may file with the Director of DIR or the Chief of the Division of Labor Standards Enforcement ("DLSE") a petition to review a determination of any rate or rates made by the Director of DIR. The Contractor may also petition the Director of DIR to make a determination for a particular craft, classification or type of work not covered by a general determination. Pending the review or determination, the wages may be assumed to be those in the applicable collective bargaining agreement, but no adjustment in the bid or Contract Price shall be made if such assumption is incorrect.

Section 7.04. Records of Hours Worked and Wages.
The Contractor shall keep, and shall cause all subcontractors on the Project to keep, certified payroll records of the hours and wages of all employees employed on the Project, and those records shall be open at all times for inspection by the District and/or the Division of Labor Statistics and Enforcement, in accordance with Sections 1776 and 1812 of the Labor Code. The certified payroll records shall contain at least the following information: the name, address, social security number, work classification, dates of payroll period, 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 the Contractor and/or each subcontractor in connection with the Work.

In the event that the Contractor and/or any subcontractor fails to submit certified payroll records to the District within ten (10) calendar days of a request from the District for the records, the Contractor and/or the subcontractor shall, as a penalty, forfeit one hundred dollars ($100) per calendar day, per worker, until strict compliance is effectuated. These penalties shall be withheld from progress payments then due and/or to become due. The Contractor is not subject to this penalty assessment due to the failure of a subcontractor to comply with these requirements if the Contractor can demonstrate that it has fully complied with the provisions of Labor Code Section 1776.

The Contractor shall not carry on its payrolls any person not actually employed by the Contractor, nor shall it carry on its payrolls employees of any subcontractor. The Contractor shall show on its payrolls all persons actually employed by the Contractor on the Project, in any capacity. The Contractor shall cause all subcontractors on the Project, whether under contract with the Contractor or under contract with any Subcontractor, to comply with this Section.

In accordance with Government Code Section 8546.7, or any amendments thereto, all books, records, and files of the Contractor, or any subcontractor connected with the performance of this Contract, shall be subject to examination and audit by the Auditor General for a period of three (3) years after final payment. Contractor shall preserve and cause all subcontractors to preserve such books, records and files for the audit period.

Section 7.05. Additional Requirements for Labor Compliance.
The Contractor shall comply with the following additional requirements and shall cause all subcontractors on the Project, whether under contract with the Contractor or under contract with any Subcontractor, to comply. The records kept by the Contactor and all subcontractors of the hours and wages of all employees employed on Project also shall be open at all times for inspection by the DIR and DLSE, in accordance with Sections 1776 and 1812 of the Labor Code. Such records shall be furnished electronically to the Labor Commissioner of the DIR monthly, unless more frequent submission is required herein, and shall be furnished within 10 days of any separate request by the DIR or DLSE. Payroll records shall be furnished in a format prescribed by the DIR and uploaded into the electronic certified payroll reporting (eCPR) system.

On a random basis and at such other times as it deems appropriate, the DIR also may confirm the accuracy of payroll reports, including by corroboration of information in payroll reports through independent sources, including without limitation worker interviews, examination of any time and pay records found within the definition of "Payroll Records" in section 16000 of Title 8 of the California Code of Regulations, direct verification of "Employer Payments" (as defined at section 16000 of Title 8 of the California Code of Regulations) through third-party recipients of those payments, or any other legal and reasonable method of corroboration. As part of its confirmation process, the DIR may require Contractor and any of its subcontractors to furnish for inspection itemized statements prepared in accordance with Labor Code Section 226. The DIR may conduct random confirmation based on a recognized statistical sampling of the records submitted.

The DIR may conduct in-person inspection(s) at the site or sites at which the Work of the Project is being performed ("On-Site Visits"). On-Site Visits may include visual inspection of required job site notices, including but not limited to

(1) the determination(s) of the Director of DIR of the prevailing wage rate of per diem wages required to be posted at each job site in compliance with Labor Code Section 1773.2; (2) the Notice of pay days and time and place of payment required by Labor Code Section 207; and (3) any other notices prescribed by law. On-Site Visits may also 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 DIR to ensure compliance with prevailing wage requirements. In accordance with Labor Code Section 90, the Labor Commissioner and his deputies and agents 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, including but not limited to evidence of compliance with Labor Code Section 226 (itemized wage statements for employees) and any other laws enforced by the Labor Commissioner.

In accordance with Section 16463 of Title 8 of the California Code of Regulations ("8 CCR Section 16463"), the District may, on its own or if required by the Labor Commissioner, withhold funds due to the Contractor when payroll records are delinquent or inadequate. The amount withheld shall be those payments due or estimated to be due to the Contractor or subcontractor whose payroll records are delinquent or inadequate, plus any additional amount that the Labor Commissioner has reasonable cause to believe may be needed to cover a back wage and penalty assessment against the Contractor or subcontractor whose payroll records are delinquent or inadequate. The Contractor shall cease all payments to a subcontractor whose payroll records are delinquent or inadequate until the Labor Commissioner provides notice that the subcontractor has cured the delinquency or deficiency. When payments are withheld under 8 CCR Section 16463, the Labor Commissioner will provide the Contractor and subcontractor, if applicable, with immediate written notice that includes all of the following: (1) a statement that payments are being withheld due to delinquent or inadequate payroll records, and that identifies what records are missing or states why records that have been submitted are deemed inadequate; (2) specifies what amounts the District has been directed to withhold; and (3) informs the Contractor or subcontractor of the right to request an expedited hearing to review the withholding of payments under Labor Code Section 1742, limited to the issue of whether the records are delinquent or inadequate or the Labor Commissioner has exceeded his or her authority under 8 CCR Section 16463. Where the violation is by a subcontractor, the Contractor shall be notified of the nature of the violation and reference shall be made to Contractor's rights to withhold or recover payments from the subcontractor under Labor Code Section 1729. The withholdings under 8 CCR Section 16463 do not preclude assessment of penalties under Labor Code Section 1776(g) for failure to timely comply with a written request for certified payroll records, as set forth below.

Section 7.06. Underpayment of Wages.
The Contractor agrees that in the event of underpayment of wages to any employee on the Project, whether by the Contractor or any subcontractor on the Project, the District may retain from payments due to the Contractor, an amount sufficient to pay such worker the difference between the wages required to be paid by the DIR, and the wages actually paid such worker for the total number of hours worked, plus any penalties and forfeitures. The District may disburse such retention to such employees.

Section 7.07. Apprentices.
Attention is directed to the provisions of Sections 1777.5, 1777.6 and 1777.7 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor.

The Contractor and all subcontractors on the Project shall comply with the requirements of Sections 1777.5 and Section 1777.6 of the Labor Code in the employment of apprentices. Violation of these requirements shall subject the Contractor and/or subcontractor to the penalties set forth in Section 1777.7 of the Labor Code and/or otherwise provided by law or Contract.

Information relative to apprentice standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex-officio the Administrator of Apprenticeship, San Francisco, California, from the Division of Apprenticeship Standards or its branch offices, and/or on the DLSR website at www.dir.ca.gov/DLSR/PWD. Apprentices employed on the Project must at all times work with or be under the direct supervision of a journeyman or journeymen.

Section 7.08. Penalties.
In accordance with Articles 2 and 3, Chapter 1, Part 7, Division 2 of the Labor Code, particularly Sections 1775, 1776, 1777.7 and 1813, the Contractor shall forfeit to District as a penalty the sum specified below, over and above any retention or withholds otherwise authorized by the agreement, as follows:

A. Up to two hundred dollars ($200) for each calendar day, or portion thereof, for each worker paid less than the applicable prevailing wages for any work done by him/her under this Contract or under any subcontract on the Project, with the amount to be determined by the Labor Commissioner in accordance with the considerations set forth in Labor Code section 1775. If a worker employed by a subcontractor on the Project is paid less than the prevailing wages by the subcontractor, the Contractor is not subject to this penalty assessment if the Contractor can demonstrate that it did not have knowledge of that failure of the subcontractor to pay the prevailing wages and that it strictly complied with the requirements of Labor Code Section 1775(b).

B. Twenty-five dollars ($25) for each worker employed in the execution of this agreement by the Contractor or by any subcontractor on the Project for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of the provisions of Article 3.

C. Failure to provide certified payroll records to the District or to the Labor Commissioner within ten (10) calendar days of a request, shall, in addition to resulting in a withholding of payments due or estimated to be due, result in a penalty in the amount of one hundred dollars ($100) for each calendar day, or portion thereof, for each worker until strict compliance is effectuated. The Contractor is not subject to this penalty assessment due to the failure of a subcontractor to comply with these requirements if the Contractor can demonstrate that it has fully complied with the provisions of Labor Code Section 1776.

D. Knowing violation of Labor Code Section 1777.5 shall yield a penalty in an amount not exceeding one hundred dollars ($100) for each full calendar day of non-compliance. A Contractor or subcontractor who knowingly commits a second or subsequent violation of Section 1777.5 within a three-year period, where noncompliance results in apprenticeship training not being provided as required, shall forfeit as a civil penalty the sum of no more than three hundred dollars ($300) for each full calendar day of noncompliance.

Section 7.09. Hours of Work; Approval of Schedules.
Eight (8) hours of labor constitutes a legal day's work, and forty (40) hours constitutes a legal work week. No worker employed at any time by the Contractor, or by any subcontractor upon the Project, shall be required or permitted to work more than eight (8) hours in any one calendar day or forty (40) hours in any one week, except as provided in Labor Code Sections 1810 through 1815.

Overtime shall be paid at the rate of not less than one and one-half (1-1/2) times the basic rate of pay, or at such other rate as stated on the applicable Determination issued by the DIR, or as may be required by applicable statutes or collective bargaining agreements.

The District reserves the right to approve or disapprove the days scheduled for work, and the hours during which work is in progress.

Section 7.10. Compliance with State Anti-Discrimination Laws.
The Contractor shall comply with Section 1735 of the Labor Code, which provides as follows:

> "A contractor shall not discriminate in the employment of persons upon public works on any basis listed in subdivision (a) of Section 12940 of the Government Code, as those bases are defined in Sections 12926 and 12926.1 of the Government Code, except as otherwise provided in Section 12940 of the Government Code. Every contractor for public works who violates this section is subject to all the penalties imposed for a violation of this chapter."

ARTICLE 8. SUPERVISION AND LABOR

Section 8.01. Supervision Procedures.
The Contractor shall supervise and direct the Work using its best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, and procedures and for coordinating all portions of the Work under the Contract.

The Contractor shall be responsible to the District for the acts and omissions of its employees, subcontractors and their agents and employees and other persons performing any of the Work.

It is prohibited to hire undocumented workers. The Contractor shall secure and cause its Subcontractors to secure proof of eligibility/citizenship to work from all workers.

The Contractor shall not be relieved from its obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Architect or the District Representative in their administration of the Contract or by inspections, tests or approvals (or the lack thereof) required or performed under Article 9 by persons other than the Contractor.

Section 8.02. Skilled Labor.
All non-apprentice labor shall have the skills of a journeyman in the applicable trade. All workmanship shall be of the highest quality and finish in all respects.

Section 8.03. No Tenancy.
All workers, contractors, or contractors' representatives are admitted to the Site only for the proper execution of the Work, and have no tenancy.

Section 8.04. Dismissal of Unsatisfactory Employees.
All employees engaged in the Work will be considered employees of the Contractor.

The Contractor shall at all times enforce strict discipline and good order among all employees including compliance with the District Guidelines for Conduct on School Sites and shall not employ on the Work any unfit person or anyone not skilled in the assigned task as defined in Section 8.02. The Contractor shall remove, or cause a subcontractor to remove from the Project, any incompetent employee, or any employee not skilled for the type of work required as defined in Section 8.02, or any employee who does not comply with the District Guidelines for Conduct on School Sites. The District may require that the Contractor immediately remove from the Work any employee for cause.

Section 8.05. Personal Attention and Superintendence; Contractor's Agent.
The Contractor shall supervise the work to the end that it shall be faithfully prosecuted. The Contractor shall at all times while the Contractor's scope of work is in progress keep a full-time superintendent who is fully empowered to act as agent for the Contractor on the Site. The Contractor shall advise the District in writing of its agent prior to the start of any work. The Contractor shall provide résumés for all of the Contractor's supervisory employees to be assigned to the Project for District review, and the District may reject any supervisory employees not deemed to be qualified at the sole discretion of the District. The Contractor shall be responsible for the faithful observation of all instructions delivered to its authorized agent(s).

If the Contractor's superintendent performs labor on the Project, the Contractor shall cause the superintendent to be paid at the prevailing wage for the classification of work performed. However, no additional compensation will be paid by the District for any work performed by the full-time superintendent.

In the event that the Contractor fails to provide a qualified full-time superintendent on the Site on any given day when work is scheduled to be performed, Contractor shall not be authorized to perform Work on that day. Contractor shall not be entitled to an extension of time for any suspension of work due to lack of a qualified superintendent.

Section 8.06. Inspection of the Work of Other Contractors.
It shall be the duty of the Contractor and all subcontractors, before beginning any work, to examine all construction and work of other contractors and/or subcontractors that may affect their work, and to satisfy themselves that everything is in proper condition to receive such work. The Contractor shall notify the District Representative in writing

prior to starting work of any discrepancies or conditions which deviate from the Contract Documents or are otherwise unacceptable. Failure on the part of the Contractor to so notify the District Representative shall constitute an acceptance by the Contractor and all subcontractors of all construction in place as being suitable in all respects to receive further work by the Contractor or subcontractors.

Section 8.07. Contractor's Coordination of Work.
The District reserves the right to do other work in connection with the Project by separate contract or otherwise. The Contractor shall at all times conduct its work so as to impose no hardship on the District or others engaged in the Work. The Contractor shall adjust, correct and coordinate its work with the work of others so that no delays or discrepancies shall result in the whole Project.

Section 8.08. Daily Reports.
No less than on a weekly basis, the Contractor's superintendent shall submit to the District Representative daily reports through the District's PMIS, which daily reports shall include, without limitation, the identity of subcontractors on the Site; an accurate headcount of workers on the Site; materials and equipment delivered to the Site; visitors to the Site; work performed; and any problems encountered.

Section 8.09. Fingerprinting.
Education Code section 45125.1 and 45125.2 apply to this Agreement. The Contractor shall, prior to commencement of Work, comply with either of the methods of ensuring safety set forth in Education Code section 45125.2(a)(1) (installation of a physical barrier) or 45125.2(a)(2) (continual supervision by an employee of Contractor who has not been convicted of a serious or violent felony). If the Contractor elects to provide continual supervision pursuant to Education Code section 45125.2(a)(2), Contractor shall require any person affiliated with Contractor (or, in appropriate cases, himself or herself) to be fingerprinted by the Department of Justice ("DOJ") if that person will have unsupervised access to school campuses. Upon verification from DOJ that those persons fingerprinted have no record of a serious or violent felony, the Contractor will so certify by signing and submitting to the Governing Board of District the certification form attached as Exhibit A to the Agreement for Construction. In addition, Contractor shall submit the names of those persons who have received clearance and are authorized to have unsupervised access to school campuses on a form as indicated in Exhibit B to the Agreement for Construction. Any person whose name is not on the cleared list may not have such access. In that case, Contractor must make arrangements with District for appropriate access. No person with a violent or serious felony as reported by DOJ may have access to the school campuses.

Failure to comply with these terms, or permitting unsupervised access by an employee whose name has not been cleared by DOJ as certified by the Contractor shall constitute grounds for termination of this Agreement.

ARTICLE 9. INSPECTION AND TESTING

Section 9.01. Inspection.
Inspection shall be provided as required under CCR Title 24, current edition. All inspection costs will be paid for by the District, including special inspection required by Title 24, except as noted otherwise below. A list of required inspections for the Project is included in the Contract Documents.

The Inspector shall be approved by the District, DSA, and the Architect. The Inspector will be employed by the District and will perform all inspections in accordance with Title 24, parts 1-5.

Section 9.02. Authority of Project Inspector; Stop Work Notices.
The designated Project Inspector shall be considered to be a representative of the District. It is the inspector's duty to inspect the Work.

The Project Inspector shall have the authority to order the work designated for inspection stopped if a determination is made that work is proceeding in violation of the Contract Documents or any orders issued by the District, its representatives, or the Architect. The failure of the Project Inspector to order the work stopped does not excuse the Contractor from complying with the Contract Documents for that work.

Upon issuing a stop work notice, the Project Inspector shall notify the Architect, who shall inspect the work in question and determine whether it does or does not comply with the Contract Documents. The decision of the Architect shall be final, subject to the disputes procedures in Article 23. The Contractor shall thereafter comply with the instructions of the Architect regarding corrections needed to cure the defect. The suspended work shall be resumed only when the Architect's instructions are fulfilled. The Contractor shall not be entitled to an extension of time in the event of such suspension of work, provided the stop work notice is determined to be supported by the facts.

Section 9.03. Effect of Inspections.
Neither the final inspection and payment, nor any interim inspection or progress payment, shall relieve the Contractor of its obligation to fulfill the Contract as required by the Contract Documents.

Any work, materials, or equipment not meeting the requirements and intent of the Contract Documents may be rejected, and unsuitable work or materials shall be made good, notwithstanding the fact that such work or materials may previously have been inspected and/or payment therefore may have been made.

Section 9.04. Notice to District of Inspection.
Where the Contract Documents, instructions by the Project Inspector, District Representative, or the Architect, laws, ordinances, or any public authority having jurisdiction require work to be inspected, tested, or approved before the work proceeds, such work shall not proceed, nor shall it be covered up, without inspection. If any part of the Work is covered prior to inspection, the District may order the work to be uncovered so that inspection may be accomplished. The Contractor shall bear all expenses of such examination and satisfactory reconstruction.

The Contractor shall provide written notice to the Project Inspector at least twenty-four (48) hours in advance of the readiness for inspection.

All work shall be available for inspection and the Project Inspector shall have full access to review all work during all working times. The Contractor shall provide all necessary means of safe access (e.g. ladders) for the Project Inspector to perform his/her duties. The Contractor shall furnish the Project Inspector with any information necessary to fully inform him/her of conditions. Inspection does not relieve the Contractor from fulfilling the requirements of the Contract Documents.

Section 9.05. Inspection of Completed Work.
Should the District Representative or the Architect determine that it is necessary or advisable to make an inspection of work already completed at any time before final inspection and acceptance of the Work, by removing or exposing any work, the Contractor shall, upon instruction of the District Representative, promptly furnish all necessary facilities, labor, and materials to do so. If the work is found to be defective in any respect due to the fault of the Contractor or any subcontractor, the Contractor shall bear all expenses of such examination and satisfactory reconstruction. If, however, the work is found to meet the requirements of the Contract Documents, the additional cost of labor and

material necessarily involved in the examination and replacement shall be allowed the Contractor and a change order shall be issued for such cost and any time extension justified by delays to the critical path.

Section 9.06. DSA Field Representative.
For contracts requiring DSA approval, the Division of the State Architect will designate a field representative who will visit the Site periodically to review with the Project Inspector compliance of the Project with CCR Title 24 requirements. The DSA field representative may require certain modifications to the Project as constructed. In the event the Contractor believes they are outside the scope of this Contract, it shall proceed as in Section 5.06.

Section 9.07. Overtime work.
Whenever the Contractor arranges to work at night or any time when work is conducted other than the normal 40-hour week, or to vary the period during which work is carried on each day, it shall give the District Representative and the Project Inspector a minimum of 48-hours notice so that inspection may be provided. Additional inspection costs incurred because of overtime or shift work shall be paid by the District. If this overtime work is necessitated by the Contractor's error or failure to perform, the cost of inspection will be borne by the Contractor.

Section 9.08. Materials Which May be Tested.
The District reserves the right to require the Contractor to provide samples, and to perform tests on any materials, articles, equipment, installations, or construction performed by the Contractor in addition to those specified in the Contract Documents. The District shall assume the cost of sampling and testing materials only when the Contract Documents do not require the Contractor to do so.

Section 9.09. Testing.
All tests shall be performed under the supervision of the testing laboratory or consultant employed by the District, and listed on the DSA-approved list, and at such times as are convenient to the District. The Contractor shall provide written notice to the District Representative at least 24 hours prior to the need for off-site tests or inspections, and the District Representative will arrange such tests or inspections. The Contractor shall bear all expenses of tests performed where the Contractor failed to provide this minimum notice.

Section 9.10. Selection of Samples.
All samples and specimens for testing shall be selected by the Project Inspector or by the testing laboratory, but not by the Contractor.

Section 9.11. Delivery of Samples.
The Contractor shall, at the Contractor's sole cost and expense, furnish, package, mark, and deliver all samples to be tested at locations other than the Site. Samples shall be delivered either to the Project Inspector or to the testing laboratory or such other address specified in the Contract Documents.

Delivery of all samples to the testing laboratory shall be made in ample time to allow the test to be made without delaying construction. No extra time will be allowed for the completion of the Work by reason of delay in testing samples required by the Contract Documents or due to the Contractor's request for substitution.

The Contractor shall allow free access at all times to the representatives of the testing laboratory to the Work, and shall point out the sources from which samples are taken.

All test reports shall be sent to all parties specified in the Contract Documents.

Section 9.12. Approval of Samples.
No materials or work of which samples and/or tests are required shall be used or covered until the District Representative or the Project Inspector informs the Contractor that such samples and/or tests have been approved. If the Contractor installs, uses, or covers any such material, article, or work prior to testing and approval, such shall be at the Contractor's sole risk and expense, and it shall bear all costs of uncovering, repair, and replacement thereof.

The approval of any samples shall be for the characteristics thereof, or for the uses named in such approval, and no other. No approval of any samples shall be deemed a change or modification in any requirement of the Contract Documents. Upon testing of any sample of material or work, no additional sample shall be considered. All material or work installed after the sampling and testing is performed and approved shall be equal to or better than the approved

sample in all respects and shall be accompanied by documentary proof that the material and work sampled is actually representative of that installed.

Section 9.13. Damage Due to Testing.
The Contractor shall, at its sole cost and expense, repair all damage resulting from testing specified in the Contract Documents. The District shall issue a Change Order for repair of damage due to sampling or testing other than specified in the Contract Documents.

The Contractor shall not make any tests upon portions of the Project already completed, except with the prior written consent and under the direction and supervision of the District Representative.

Section 9.14. Retesting.
If as a result of any test, whether originally specified or not, any material or work is found to be unacceptable, it shall be rejected, and all further sampling and testing required by the District or District Representative shall be at the Contractor's expense.

Section 9.15. Effect of Sampling and Testing.
The District assumes no obligation, and the Contractor shall be relieved of no obligation undertaken pursuant to the Contract Documents by virtue of sampling and testing specified in this article.

The responsibility for incorporating satisfactory materials and workmanship which meet the Contract Documents in the work rest entirely with the Contractor, notwithstanding any prior samples or tests.

ARTICLE 10. PROTECTION OF WORKERS, PUBLIC AND PROPERTY

Section 10.01. Safety Precautions and Programs.
The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, for maintaining all safety and health conditions on the Site and for ensuring against and/or correcting any hazardous conditions on the Site. Also, in no case shall the District, the District Representative, the Architect, the Inspector, or their agents, employees or representatives, have either direct or indirect responsibility for the means, methods, techniques, sequences, or procedures utilized by the Contractor, or for safety precautions and programs in connection with the Work, or for maintaining any safety or health conditions on the Site, or for ensuring against or correcting any hazardous conditions on the Site.

Certain work may be ongoing at the time school is in session; therefore, the Contractor shall take precautions to prevent injury and access to children and staff and shall comply with the District's Guidelines for Onsite Safety. Material storage and vehicle access and parking shall be subject to District approval.

The Contractor shall designate a responsible member of its organization at the Site whose duty shall be the prevention of accidents and overall jobsite safety for contractors/subcontractors employees and visitors. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the District Representative.

Section 10.02. Protection of Persons and Property.
The Contractor shall at all times, until final acceptance and payment hereunder, maintain adequate protection against injury to persons, including employees, or damage to property, on or near the Project, or adjacent to the Site. The Contractor shall be responsible for maintaining all safety and health conditions on the Site and for ensuring against and/or correcting any hazardous conditions on the Site. In no case shall the District, the District Representative, the Architect, the Inspector, or their agents, employees, or representatives, have either direct or indirect responsibility for maintaining any safety or health conditions, or for ensuring against or correcting any hazardous conditions, on or near the Site, or adjacent to the Site.

The Contractor shall provide a safe environment for all functions to be performed by the District Representative, Architect and Project Inspector, and a safe place for all employees to work. The use of alcohol, drugs, or tobacco (including e-cigarettes) will not be permitted on District property.

The Contractor shall comply with all Occupational Safety laws, rules and regulations applicable to the work.

Section 10.03. Protection and Repair of Work.
The Contractor shall protect the District's structures, facilities, equipment, tools, materials, and any other property on or adjacent to the Site against damage, loss, or theft by providing adequate security measures for its work. The Contractor shall, until final payment hereunder, maintain protection of all of its work and work performed by others under this Contract from damage, loss, defacement, or vandalism. The Contractor shall provide protection of completed work which may be subject to damage as a result of the Contractor's failure to perform as scheduled.

The Contractor shall repair or replace any damage and remove any damaged or defaced material and/or equipment from the Site at no cost to the District, and Article 17 shall apply to such material or equipment.

Section 10.04. Protection of Workers.
The Contractor shall take every precaution for the safety of all employees and others on the Work, and to comply with all applicable provisions of federal, state, and local safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the Work is being performed.

The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workers and the public, and shall post danger signs warning against hazards created by construction including, but not limited to, protruding nails or reinforcing steel, hod hoists, elevator hatchways, scaffolding, window openings, stairways, and falling materials.

The Contractor shall immediately replace or repair any unsafe ladder, scaffolding, shoring, or bracing, or correct any other dangerous or hazardous situation that may exist.

The responsibility for maintaining a safe working site shall be the Contractor's, and the District and District Representative undertake no obligation to suspend the work or notify the Contractor of any hazardous conditions or noncompliance with safety laws. See hazardous materials exhibit for further information.

In no case shall the District, the District Representative, the Architect, the Inspector, or their agents, employees or representatives, have either direct or indirect responsibility for maintaining any safety or health conditions, or for ensuring against or correcting any hazardous conditions on the Site.

Section 10.05. Working Limits and Regulations.
The Contractor shall confine its apparatus, storage and materials, and construction operations within the limits established by the District Representative, and shall not unreasonably encumber the Site or adjacent areas with its materials and/or equipment.

The Contractor shall enforce any instructions from the District Representative or District regarding fires, placement of signs, danger signals, barricades, radios, and noise.

Section 10.06. Protection of Existing Improvements.
The Contractor shall clean the portions of existing improvements and facilities which are used by, traversed, or dirtied by the workers on the Work, normal maintenance due to use by District employees or the public excepted.

The Contractor shall take all necessary precautions to protect all existing improvements and facilities from any damage resulting from the operations, equipment, or workers of the Contractor during the course of the construction, and Contractor shall be strictly liable for failure to adequately protect any existing improvements and/or facilities.

The Contractor shall take all necessary precautions to protect existing facilities against the effects of the elements and Contractor shall be strictly liable for failure to adequately protect any facility.

All damaged improvements and facilities shall be replaced, repaired, and restored to their original condition without additional cost to the District and without an extension of the Contract Time.

Section 10.07. Traffic Signals and Traffic Control.
Existing signs, lights, traffic signals, control boxes, hydrants, meters, and other similar items occurring within the street or sidewalk areas shall be kept free of obstructions and accessible at all times. All such items shall be protected from the Contractor's operations and shall not be obliterated or obscured by its equipment or materials.

Should it be necessary to cover up, move, or alter such items, this shall be done only with permission of the authorities having jurisdiction over the items involved.

Should it be necessary to block a street or sidewalk, the Contractor shall first notify the District Representative and the police and fire departments and other agencies with jurisdiction, and shall comply with their instructions, including scheduling limitations.

Section 10.08. Security of the Site.
Contractor shall provide and maintain temporary fencing surrounding the buildings and/or rooms under construction, and staging areas. Set-up/relocation of temporary fencing is included in the Contract Sum. Contractor is responsible for the security of all equipment, material, and completed construction items. Contractor is responsible for maintaining access to any occupied buildings on the school site at all times. Temporary covered walkways and/or barricades may be required. Contractor is responsible for securing any breeches to existing security system/building caused by its Work. Temporary measures may include security guards, temporary doors, temporary alarm, etc.

Section 10.09. Removal of Barricades.
Upon completion of the work, the Contractor shall remove from the Site all materials used for barricades, temporary scaffolding, or any other temporary uses.

Section 10.10. Protection of Adjacent Property; Notices.
In addition to any requirements imposed by law, the Contractor shall shore up, brace, underpin, and protect as may be necessary all foundations and other parts of all existing structures on the Site or adjacent to the Site which are in any way affected by the excavations or other operations connected with the completion of the Work.

Prior to excavation, the Contractor shall notify all public utilities and governmental agencies of the work proposed, and shall ascertain from them the exact location of their utilities.

Prior to commencing any work which in any way affects adjoining or adjacent land or buildings thereon, or public utilities, the Contractor shall notify the District Representative, who will send the District and occupants thereof a notice, which specifies the type of work to be done, the schedule of the work, the impacts expected from the work, and the protective measures being taken by the Contractor. The notice shall also specify that any person receiving notice who has questions regarding it may contact the District Representative.

Whenever any notice is required to be given to any adjoining or adjacent landowner, utility, governmental agency or other party before commencement of any work, the notice shall be given by the Contractor at least seven days in advance of the work, or longer if required by law or regulation, with a copy delivered to the District Representative.

The Contractor shall, at the written instruction of the District Representative, meet with any recipient of such notice to explain and discuss the proposed work.

Section 10.11. Fire Protection.
The Contractor shall take all steps necessary to protect all structures from fires and sparks originating from the Work, shall comply with all laws and regulations regarding fire protection, and shall comply with all instructions of the fire department with jurisdiction.

The Contractor shall notify the District Representative and the fire department in writing at least 72 hours prior to disconnection of either water or electrical service to the Site, and shall comply with the fire department's instructions regarding fire safety.

The Contractor must keep the fire and intrusion detection systems operational throughout the duration and scope of its work.

Section 10.12. Repairs or Replacement.
Any damage to existing conditions, or to any other improvement or property above or below the surface of the ground, whether private or public, arising from performance of this Contract shall be repaired within 48 hours by the Contractor without expense to the District, unless disruption of school operation or creation of a safety hazard has occurred, in which case damage will be corrected immediately.

If, in the opinion of the Architect, the best interest of the District requires that repairs be made prior to the execution of any further work, the District Representative will so notify the Contractor who shall delay or discontinue that part of the Work until the necessary repair has been made. Such delay shall be considered non-compensable, and no extension of the Contract Time will be granted therefore.

Upon the failure of the Contractor to comply with any such order, or upon the Contractor's failure to make immediate emergency repairs which are necessary to protect the Work, the District shall do that work itself as is necessary to protect life and property, in its sole discretion, and deduct the total cost of such work from the next progress payment. No prior notice to the Contractor shall be necessary for the District to take this action.

Section 10.13. Emergency Safety Actions.
In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without previous instructions or authorizations from the District, is authorized and shall act at its discretion and risk to prevent such threatened loss or injury, and the Contractor shall bear all costs of that action. The Contractor shall immediately notify the District Representative of such actions, and thereafter shall comply with any instructions issued by the District Representative.

ARTICLE 11. SUBMITTALS

Section 11.01. Submittals.
The Contractor, at its sole cost and expense, shall furnish to the District Representative all Submittals and other descriptive material as are required by the Specifications or requested by the Architect.

Shop drawings shall be done with sufficient detail to adequately describe items proposed to be furnished or methods of installation to enable the District and Architect to determine compliance with the Specifications and with the design and arrangement shown on the working drawings.

The Contractor shall check and coordinate all Submittals with the Work of all trades involved before they are submitted. The Contractor shall review each Submittal for conformance with the requirements of the Contract Documents.

Unless otherwise agreed in writing by the District in response to the Contractor's schedule of Submittals, all Submittals for the Project shall be made within thirty-five (35) days of Contract Award; however, the Contractor shall coordinate the schedule of its Submittals with the requirements of the Contract Schedule so as not to delay the Project. No delay claims related to Submittals will be entertained on the Project for any Submittal originally received after the Submittal period. If Contractor fails to provide Submittals as an when required, then Contractor agrees to the following:

(a) District shall not be required to accept limitations in materials, colors, quality, or any other aspect of products or materials due to the Contractor's failure to provide Submittals as required,
(b) At District's discretion, Contractor may be directed to furnish and install temporary materials until the District-selected material is available, and
(c) District may require Contractor to install the District-selected materials during non-school hours/days without an increase in the Contract Sum and without an extension of the Contract Time.

Contractor shall submit a schedule of Submittals organized by Specification section required for the Project. It shall delineate whether product data, installation instructions, shop drawings, samples, extra stock, or mock-ups are required. The schedule of Submittals shall indicate whether the Submittal will be in electronic format, as set forth below. In general, other than items requiring color selections, samples and shop drawings, Submittals will be in electronic format.

This schedule of Submittals shall be submitted using the District's PMIS within ten (10) calendar days of Contract Award. Any omissions or inaccuracies shall not relieve the Contractor of the obligation for conforming to the requirements in the Contract Documents. The Contractor's Submittal schedule shall provide sufficient time for delivering the Submittal to the Architect, the Architect's review of each Submittal, delivering the Submittal to the Contractor, and re-submittal as necessary. In no case shall the Contractor allow fewer than fourteen (14) days, exclusive of delivery time, for the District Representative and the Architect to review each Submittal.

Section 11.02. Submission of Submittals.
Most Submittals shall be submitted electronically. Electronic Submittals which are submitted together shall be compiled into a single, bookmarked PDF file, containing links to enable navigation to each item within the Submittal package. The Contractor shall name the electronic Submittal file with a consistent project identifier, composed of the Project name, bid package number, and specification section number. Electronic Submittals shall be transmitted via the District's PMIS. The District Representative will not review the Submittals for technical compliance, but may reject any Submittal found, in the District Representative's judgment, to be incomplete. The District Representative will maintain a Submittal log, and weekly meeting minutes shall note if Submittals have been accepted. Submittals requiring color selections, samples, or shop drawings will be logged.

For mock-ups, color selections and samples, the Contractor shall submit no less than three (3) originals. All Submittals of mock-ups, color selections, and samples shall be marked with the Project name, the Contractor's name, and the specification section number, and shall be accompanied by a letter of transmittal to the District Representative. The letter of transmittal shall list the identifying number of the mock-ups, color selections, and samples submitted and cross-reference them to the page or sheet in the specifications and/or working drawings to which they are related. Photos of mock-ups, color selections, and samples shall be uploaded to the District's PMIS along with the letter of transmittal.

By approving and submitting shop drawings, product data, manufacturers' instructions, and samples, the Contractor represents that it has determined and verified all materials, field measurements, and field construction criteria related thereto and that it has checked and coordinated the information contained within those Submittals with the requirements of the Work and to the Contract Documents. The Contractor shall adhere to any supplementary processing and scheduling instructions pertaining to Submittals as may be issued by the District Representative.

The District Representative will not accept shop drawings, product data, or manufacturers' instructions which are not sufficiently dimensioned and detailed to demonstrate compliance with the Contract Documents.

The Submittals shall be submitted promptly, and no later than specified in the Submittal schedule, so as to cause no delay in the Work.

Section 11.03. Review of Submittals.
Following submission, the Submittals will be reviewed and returned with one or more of five possible responses by the District Representative or Architect. These possible responses are as follows:

A. Unreviewed: If the Submittal is not required, or if it is not complete, or if it does not meet the form, format, and number requirements specified, it may be returned unreviewed. If the Submittal is not required, Work may commence; if the Submittal was returned due to form requirements, it shall be resubmitted and approval obtained prior to commencement of the Work.

B. Approved, Reviewed for General Conformance Only, or No exceptions taken: In the event the Submittal is acceptable as submitted, it will be returned with this status. Work may proceed upon receipt of approved Submittal.

C. Make Corrections Noted: If the Submittal is acceptable except for certain items which have been noted by the Architect, it will be so designated. Work may proceed with the corrections made, and no resubmittal is necessary.

D. Revise and Resubmit, or Submit Specified Item: This status indicates that revisions are noted on the Submittal, and an additional Submittal is required to reflect those revisions and/or additional information. Work may not commence until the resubmittal is approved.

E. Rejected: A Submittal may be rejected if it is not in compliance with the Contract Documents, or if it proposes an "or equal" or substitution which is not acceptable to the Architect. A superseding Submittal shall be submitted and approved prior to commencement of the Work.

Should the Contractor proceed with the Work shown on a Submittal before approval is received, it shall remove and replace or adjust any Work which is not in accordance with the Submittal as ultimately approved, and it shall be responsible for any resultant damage, defect, added cost and/or delay. The District shall be under no obligation to pay for Work installed prior to approval of Submittals, until the Submittals are approved and the Work in place is found to be in compliance with the Contract Documents.

The Contractor shall resubmit Submittals in categories "D" and "E" above after making any changes required so that Submittals will comply with the Contract Documents. When resubmitting, the Contractor shall direct specific attention to corrected or changed areas. Resubmittals shall be made within ten (10) days of return of the previous Submittal, and in any event in sufficient time so as to avoid delay to the Work. No delay claims related to resubmittals will be entertained on the Project for any resubmittal.

The Architect shall determine the adequacy and completeness of all Submittals. Where the Architect deems a Submittal to be inadequate, incomplete, or otherwise unsuitable for proper review, the Contractor shall submit all additional information requested by the Architect. There shall be no change to the Contract Time or the Contract Sum when such additional information is required.

Section 11.04. Submittals Showing Variation from Contract.
It shall be the responsibility of the Contractor to specifically point out any variation or discrepancy between the Submittals submitted and the Contract Documents, along with an explanation of why they are requested, in its letter

of transmittal. Failure by Contractor to identify in its letter of transmittal any variation, discrepancy, or conflict with the Contract Documents shall render the approval null and void, and Contractor shall bear all risk of loss and reconstruction costs or delays.

If any architectural, plumbing, mechanical, electrical, or structural modifications are required as a result of the approval of Submittals which deviate from or do not comply with the Contract Documents, those modifications shall be made without extra cost to the District, and without extension of the Contract Time. Any other resultant costs, including but not limited to design fees, construction management fees, costs incurred by other contractors, or inspection fees, shall be at the expense of the Contractor.

Section 11.05. Effect of Approval of Submittals.
The approval of Submittals shall not relieve the Contractor of the obligation for accuracy of dimensions and details; for conforming the work to the requirements of the Contract Documents; or from responsibility to fulfill the Contract at no extra cost to the District, within the Contract Time.

Section 11.06. Equal Materials.
Unless otherwise provided in the technical specifications, whenever in the Contract Documents any systems, processes, products, or materials are indicated or specified by the name brand of the manufacturer, or by patent or proprietary names, those specifications shall be deemed to be a measure of quality and utility or a standard, and shall be deemed to be followed by the words, “or equal.” It is the intent of this article to comply with Public Contract Code Section 3400.

If the Contractor desires to use any other brand or manufacturer of equal quality and utility to that specified (an “Equal”), it shall make application to the District Representative in writing, within ten (10) business days after Notice of Intent to Award, and shall submit samples and all other information necessary to substantiate its claim of “or equal.” Such application constitutes a certification that the Contractor:

A. Has investigated the proposed Equal and determined that it meets or exceeds, in all respects, the specified system, process, product, or material.

B. Will provide the same warranty for the proposed Equal as for the specified system, process, product or material.

C. Will coordinate installation and make other changes which may be required for work to be complete in all respects and at no additional cost to the District.

D. Waives claims for additional costs and/or Contract Time which may subsequently become apparent based on the approved Equal.

The Architect then will determine whether or not the proposed system, process, product or material is equal in quality and utility to that specified, and its decision shall be final. The Architect will render its decision within twenty one (21) business days after submission of all required information for the application. If the request is not accepted, the Contractor shall provide the specified system, process, product or material without an increase in the Contract Sum and/or Contract Time.

Neither the submission of a request for an equal, nor the Architect’s review of the application, will extend the time for submission of any required Submittals.

Requests for equal systems, process, products or materials will be considered only when offered by the Contractor as required by this article.

Section 11.07. Substitutions.
Unless otherwise provided in the technical specifications, the Contractor may make proposals for Substitutions to systems, process, products, or materials shown or specified only under one or more of the following conditions:

A. Unavailability: If the specified system, process, product, or material, or an Equal, is no longer available in the marketplace.

B. Delay: If obtaining the specified system, product, process, or material, or an Equal, will delay completion of the Work through no fault of the Contractor.

C. Better system, process, product, or material: If a better system, product, process, or material is available at no additional cost.

D. Savings: If a system, process, product, or material which meets all of the performance requirements of that specified is available at a savings to the District.

A proposal for Substitution shall include all information required by the Architect to evaluate the substitute system, process, product or material. All Substitutions shall be submitted with an approved "Substitution Request Form". *See* Construction Forms Manual. Such proposal constitutes a certification that the Contractor:

A. Has investigated the proposed Substitution and determined that it meets or exceeds the performance requirements of the specified system, process product or material.

B. Will provide the same or better warranty for the proposed Substitution as for specified system, process, product, or material.

C. Will coordinate installation and make other changes which may be required for the work to be complete in all respects at no additional cost to the District.

D. Waives claims for additional costs and/or Contract Time, which may subsequently become apparent.

The District Representative and the Architect shall evaluate a timely Substitution request, and shall approve, deny, approve with conditions, or initiate the procedure for a change order in response to the Contractor's request. This decision shall be final. This decision will be rendered within twenty one (21) business days after submission of all required information for the proposal. If the request is not accepted, the Contractor shall provide the specified system, process, product, or material without an increase in the Contract Sum and/or Contract Time.

Failure by the Contractor to identify all deviations from the Contract Documents in its request for substitution shall render any District action taken thereon null and void. The Contractor shall bear all costs resulting from any error in the request for Substitution.

Only one request for Substitution will be considered for each product except due to unavailability.

Substitutions may be subject to DSA approval, in which case the time to review will be extended by the duration of the DSA approval process.

Neither the submission of a request for substituted systems, processes, products, or materials, nor the District Representative's and/or Architect's review of the application, will extend the time for submission of any required Submittals.

Section 11.08. Time for Proposing Substitution.
Substitution proposals will not be considered prior to bidding. All requests for Substitutions shall be made within the same time requirement for initial Submittals. Failure to timely submit a Substitution request shall constitute a waiver by the Contractor and an acceptance of the specified systems, processes, products, and materials. Late Submittals may be considered only when the District Representative consents in writing, and the District's best interests so require.

Section 11.09. Samples and Testing of Proposed Substitutions; Costs of Adapting to Work.
When the District Representative or Architect determines that samples and testing are required to evaluate a request for a Substitution, the District Representative shall so advise the Contractor, and specify the systems, processes, products, materials or work to be sampled. The Contractor shall, at no cost to the District, provide samples as required by these General Conditions dealing with samples and testing, or the Technical Specifications.

The Contractor shall bear all costs of sampling and testing required to decide a request for Substitution, and if a Substitution is accepted, the Contractor shall bear all costs associated therewith, including the cost of the District Representative's, Architect's, and/or engineer's services required to adapt the Substitution to the design to the complete satisfaction of the District, and all costs of mechanical, electrical, structural, or other changes needed to adapt the Substitution to the Work.

Section 11.10. Effect of Approval of Equal Materials or Substitution Request.
If an application for an Equal or Substitution request is approved, the Contractor shall be solely and directly responsible for setting approved Equal or Substitution systems, processes, products, materials, and/or equipment into the available space, and for the proper operation of the Equal or Substitution systems, process, products, materials, and/or equipment with all other systems, processes, products, materials, and/or equipment with which it may be associated, all in a manner acceptable to the District.

No time extensions nor any increases in the Contract Sum shall be granted on account of an Equal or Substitution. In the event of a savings, the Contract Sum shall be adjusted by the price difference between the approved Equal or Substitution and the originally specified item.

Section 11.11. Quality of Materials and Products.
The Contractor shall, if required by the Architect, Project Inspector, or District Representative, furnish satisfactory evidence as to the kind and quality of materials provided.

The District Representative may require, and the Contractor shall submit if required, a list designating the source of supply of each item of materials incorporated into the Work, and in such event, those materials or products shall not be delivered to the Work nor installed therein until after the District Representative has approved the list.

Contractor shall certify that the materials and equipment installed comply with the Contract Documents and to the best of the Contractor's knowledge, no installed materials or equipment contain asbestos.

Section 11.12. Better Material or Process.
In the event that the Contractor furnishes a material, product, process, or article better than that specified in the Contract Documents, the difference in cost of that material, product, process, or article shall be borne by the Contractor.

Section 11.13. Industry Standards.

A. Any material specified by reference to the number, symbol, or title of a specified standard such as a Commercial Standard, a Federal Specification, a Trade Association Standard, or other similar standard, shall comply with the requirements in the latest revision thereof, including any amendments or supplements thereto, in effect on the date of the Bid, except as limited to type, class, or grade, or modified in that reference.

B. The standard referred to, except as modified in the specifications, shall have full force and effect as though printed in these specifications. These standards are not furnished to the bidder for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements.

1. Where Federal Specifications are referred to as a measure of quality and standard, they refer to Federal Specifications established by the Procurement Division of the United States Government and are available from the Superintendent of Documents, U.S. Government Printing Office.

2. Where Federal Specification numbers are used, they refer to the latest edition including amendments thereto.

3. Where Commercial Standards (CS) or Product Standards (PS) are referred to as a measure of quality, standard, and method of fabrication, they refer to Commercial Standards and Product Standards issued by the U.S. Department of Commerce.

4. Where ASTM serial numbers are used, they refer to the latest tentative specifications, standard specifications, standard method or standard methods of testing, issued by the American Society for Testing Materials, unless specifically noted.

Section 11.14. Materials and Products Storage.
The Contractor shall confine the on-site storage of all materials, products, and equipment required in the performance of this contract to the areas specified by the District. The Contractor shall obtain prior approval from the District Representative regarding areas for storage and methods of protection. All material, products, and equipment shall be brought and used upon the premises in such manner as to leave driveways and parking areas clear for the regular use of the public and District employees.

Section 11.15. Original Packages or Containers; Labels.
All materials delivered to the Site shall be new, unless otherwise specified, of the type, capacity, and quality specified, and free from defects. All materials shall remain in their original packages or containers until ready for use. The labels of all packages or containers shall remain affixed, and kept legible. No product shall be stored in any container, the label of which does not accurately describe the contents of the container.

Section 11.16. Protection of Materials and Equipment.
The Contractor shall protect the work, materials, and equipment from damage due to the action of the elements, trespassers, or other causes. The Contractor shall properly store materials and equipment and, when necessary, erect temporary structures to protect them from damage. The Contractor shall replace any items damaged as a result of improper protection at no expense to the District.

Section 11.17. Providing and Paying for Materials.
Except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, products, articles, processes, labor, tools, equipment, and installation, and all associated superintendence of every nature whatsoever necessary to execute and complete the Work within the Contract Time.

Section 11.18. Warranty of Title.
No material, article, product, supplies, or equipment for the Work shall be subject to any chattel mortgage, or a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier.

The Contractor warrants good and sufficient title to all material, supplies, and equipment installed or incorporated in the Work, and agrees upon completion of the Work to deliver the premises, together with all improvements and appurtenances, constructed or placed thereon by the Contractor, to District, free from any claims, liens, or charges.

The Contractor 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 a lien upon the premises or any improvement or appurtenances thereon; provided, however, that nothing contained in this Section shall defeat or impair the rights of persons furnishing materials or labor under the payment bond given by the Contractor, nor any rights under any law permitting such persons to look to funds due to the Contractor but retained by District.

The Contractor shall cause the provisions of this Section to be inserted in all subcontracts and material contracts executed by the Contractor and notice of this provision shall be given to all persons furnishing materials for the Work.

This Section shall not disallow the Contractor's installing any devices or equipment of utility companies or of governmental agencies, the title to which is commonly retained by the utility company or the agency.

Section 11.19. Patents and Royalties.
All fees, claims, or royalties for any patented or copyrighted invention, article, arrangement, or plan that may be used upon or in any manner connected with the doing of the work or any part thereof shall be included in the price bid for doing the work. The Contractor and its sureties shall protect, defend, indemnify and hold harmless the District, District Representative, the Project Inspector, the Architect and its consultants, and each of their respective officers, agents, and employees against any and all demands made for such fees or claims and against any and all suits, demands, claims or causes of action brought or made by the holder of any invention, patent, copyright, or trademark, or arising from any alleged infringement of any invention, patent, copyright, or trademark.

Before final payment is made on account of this Contract, the Contractor shall furnish acceptable proof to District of proper release from all such fees or claims.

Section 11.20. Payment of Federal or State Taxes.
Any federal, state or local tax, specifically including sales and use taxes, payable on materials furnished by the Contractor pursuant to the Contract, shall be included in the Contract Sum and paid by the Contractor.

ARTICLE 12. PROGRESS PAYMENTS

Section 12.01. Schedule of Values.
At least fourteen (14) days prior to the first payment application, the Contractor shall submit to the District Representative a schedule of values broken down by phase, and within each phase by building, in sufficient detail to evaluate progress at any point in the Work. In no event shall an individual line item on a schedule of values exceed five (5) percent of the Contract Sum unless so approved in advance by the District Representative. Labor, material, and subcontract costs shall be shown separately. Cost of Contract closeout shall be shown as individual line items, including, but not limited to, closeout documents, punchlist, and as-built documentation. Each of these line items shall be no less than three (3) percent of the total Contract Sum.

All other General Conditions items should be prorated among the actual construction values. The schedule of values must be prepared in sufficient detail and supported by such data to substantiate its accuracy as the District Representative and the District may require. This schedule, when approved, shall be used as a basis for the Contractor's applications for payment, and the approved schedule of values is an express condition precedent to processing the Contractor's payment application(s).

Section 12.02. Application for Payment.

A. Prior to the date for each progress payment review established in the Preconstruction Meeting, the Contractor shall submit to the District Representative through the District's PMIS the schedule of values, marked to show the percentage of completion proposed by the Contractor for each line item. No extension of dollar amounts is required.

B. At a meeting held on or before the assigned billing date of each month, the District Representative, Architect, Project Inspector, and the Contractor will review the Contractor's proposed percentages of completion and agree on a final percentage to be paid for that month. The progress payment will be based on the estimated percentage complete. Upon agreement of the amount due, the Contractor will prepare a final copy of the Application of Payment Summary and transmit it to the District Representative for processing by the assigned day of each month.

C. Release of Liens: With each final monthly application for payment, Contractor shall submit a conditional lien release in the form provided in Civil Code section 8132. Additionally, Contractor shall submit an unconditional lien release in the form provided in Civil Code section 8134 for all work through the prior progress payment. When a subcontractor completes its scope of work, Contractor shall submit with its pay application either a conditional lien release in the form provided in Civil Code section 8136 if retention has not been paid or an unconditional lien release in the form provided in Civil Code section 8138 if the subcontractor has been paid in full. For final payment, the Contractor and all of its Subcontractors and material suppliers that have not previously submitted unconditional lien releases under Civil Code section 8138 shall submit final conditional lien releases under Civil Code section 8136 and final unconditional lien releases under Civil Code section 8134.

D. The signing of a certificate of payment will constitute a representation by the District Representative, Project Inspector, and the Architect to the District that, based on their observations at the Site, and the data comprising the application for payment, the Work has progressed to the point indicated and that, to the best of their knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents (subject to any specific qualifications stated in the certificate for payment); and that the Contractor is entitled to payment in the amount certified. However, by signing a certificate for payment, the District Representative and the Architect shall not thereby be deemed to represent that either has made exhaustive or continuous on-site inspections to check the quality or quantity of the work, that either has reviewed the construction means, methods, techniques, sequences, or procedures, or that either has made an examination to ascertain how or for what purpose Contractor has used the monies previously paid on account of the Contract Sum.

E. No progress payment will be released until District Representative has received all of the following items in acceptable form: as-built updates, schedule updates, certified payroll and other pay records if requested by the District, and lien releases.

Section 12.03. Payment for Stored Materials.
Payments may be made by the District, at its discretion, on account of materials or equipment not incorporated in the Work but delivered to the Site and suitably stored by the Contractor. Payments for materials or equipment stored shall only be considered upon submission by the Contractor of satisfactory evidence demonstrating that it has acquired title to such material, that the material will be used in the Work, that it is satisfactorily stored, protected, and insured, and that the Contractor has undertaken such other procedures satisfactory to the District Representative, Project Inspector, and Architect, to protect the District's interests. Materials stored off-site, to be considered for payment, shall, in addition to the above requirements, be stored in a bonded warehouse, fully insured, and available to the Architect and District Representative for inspection. The District Representative shall have complete discretion as to the amount of material and equipment that may be stored on the Site at any given time.

Section 12.04. Payment Time; Retention.
There shall be reserved from the monies earned by the Contractor on estimates a sum equal to five percent (5%) of such estimates. It is understood that, if payment requests are made in accordance with established time schedule, payment requests received and approved by District will be processed within forty (40) days following approval. Payment for Change Orders, if any, under this Contract shall be made in like manner after the Change Order is fully executed.

Section 12.05. Posting Securities in Lieu of Withholds.
Pursuant to Public Contract Code Section 22300, at the request and expense of the Contractor, Contractor may elect to deposit securities equivalent to the amount withheld pursuant to Section 12.04 with the District or with a state or federally chartered bank in California as the escrow agent, who shall then pay the retainage to the Contractor. Upon satisfactory completion of the Contract without grounds to withhold as addressed in Section 12.06, the securities shall be returned to the Contractor.

Alternatively, the Contractor may request, pursuant to Public Contract Code Section 22300, and the District shall make, payment of retentions under Section 12.04 directly to the escrow agent. The Contractor shall receive the interest earned on the investments upon the same terms provided for in Section 22300 for securities deposited by the Contractor. Upon satisfactory completion of the Contract without grounds to withhold as addressed in Section 12.06, the Contractor shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from the District.

If Contractor elects to receive interest on moneys deposited with an escrow agent in lieu of retention, Contractor shall provide written notice to all subcontractors performing at least five percent (5%) of the Work of Contractor's option within fifteen (15) days of electing to receive interest. Contractor shall, at the request of any such subcontractor, make that option available to the subcontractor regarding any moneys withheld in retention by Contractor from the subcontractor. The subcontractor shall receive the identical rate of interest received by Contractor, less any actual *pro rata* costs associated with administering and calculating that interest, as provided for in section 22300. If Contractor elects to substitute securities in lieu of retention, then, by mutual consent of Contractor and the subcontractor, the subcontractor may substitute securities in exchange for the release of moneys held in retention by Contractor.

Securities eligible for investment under this Section shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, stand-by letters of credit, or any other security mutually agreed to by the Contractor and the District.

The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

Section 12.06. Withholding Additional Amounts; Grounds.
In addition to the amounts which the District may retain as provided in Section 12.04, the District may withhold a sufficient amount from any payment or payments otherwise due to the Contractor as in the District's sole discretion may be necessary to protect the District in the event of the following:

A. Third party claims filed or reasonable evidence indicating probable filing of such claims;

B. Defective work not remedied;

C. Failure of the Contractor to make proper payments to any of its Subcontractors or for labor, materials, or equipment;

D. The occurrence of reasonable doubt that the Contract can be completed for the balance of payments then unpaid to the Contractor, or in the time remaining until expiration of the Contract Time;

E. Failure of the Contractor to comply with any lawful or proper direction concerning the Work given by any District representative authorized to have given such instruction;

F. Claims and/or penalties which state law assesses or may assess against the Contractor for violation of such law;

G. Any claim or penalty asserted against the District or that may be asserted against the District by virtue of the Contractor's failure to comply with the provisions of all governing laws, ordinances, regulations, rules, and orders;

H. Any liquidated damages which may accrue as a result of the Contractor's progress failing to meet the schedule milestones or failing to achieve substantial completion or final completion within the Contract Time.

I. Any reason specified elsewhere in the Contract Documents as grounds for a retention or that would legally entitle the District to a set-off.

In order to adequately protect the District, the Contractor agrees that the basic standard to determine the amount to be withheld pursuant to this Section shall be one hundred fifty percent (150%) of the amounts claimed or the value of the work not done or defectively done; provided, however, that District reserves the authority to retain greater sums should such sums be necessary in the District's discretion to adequately protect it.

Section 12.07. Disbursement of Withheld Amounts.
The District, in its sole discretion, may apply any withheld amount or amounts to the payment of any claim resulting in a withhold. The Contractor agrees and hereby designates the District as its agent for such purposes, and any payment so made by the District shall be considered as a payment made under this Contract by the District to the Contractor. The District shall not be liable to the Contractor for any payments made in good faith and with reasonable notice to Contractor. Such payments may be made without a prior judicial determination of the claim or claims. The District shall render to the Contractor a proper accounting of any funds disbursed on behalf of the Contractor.

Prior to disbursing any amounts, District shall afford the Contractor an opportunity to present good cause, if any it has, why the claim or claims in issue are not valid or just claims against the Contractor. The District reserves the right then to take such further steps as are appropriate, in its sole discretion, including, but not limited to, seeking a judicial resolution of the controversy.

Section 12.08. Correction of Statement and Withholding of Payment.
No inaccuracy or error in any statement provided by the Contractor shall operate to release the Contractor or any surety from the error, or from damages arising from such work, or from any obligation imposed by the Contract Documents. The District shall retain the right subsequently to correct any error made in any previously issued claim for the progress or other payment, or payment of any kind issued, by adjustments to subsequent payments.

Section 12.09. Effect of Progress Payments.
Neither the payment, the withholding, nor the retention of all or any portion of any progress payment claimed to be due and owing to the Contractor shall operate in any way to relieve the Contractor from its obligations under this agreement. The Contractor shall continue diligently to prosecute the Work without reference to the payment, withhold, or retention of any progress payment. The payment, withhold, or retention of any progress payment shall not be grounds for an extension of the Contract Time.

ARTICLE 13. TIME OF WORK

Section 13.01. Not applicable.

Section 13.02. Contract Schedule Development.
Within ten (10) days after receiving the Notice to Proceed, the Contractor shall submit a detailed proposed Contract Schedule presenting an orderly and realistic plan for completion of the Work, in conformance with the requirements of this Article. The proposed Contract Schedule shall be in hard copy and in electronic format submitted through the District's PMIS.

The Contract Schedule shall furnish or comply with the following requirements:

A. A time scaled CPM type schedule prepared in Oracle Primavera P6 or other approved schedule software approved in writing by the District.

B. No activity on the schedule shall have a duration longer than fourteen (14) days, with the exception of fabrication and procurement activities, unless otherwise approved by the District Representative. Activity durations shall be the total number of actual days required to perform that activity including consideration of weather impact on completion of that activity.

C. Procurement of major equipment, through receipt and inspection at the job site, identified as a separate activity.

D. Owner furnished materials and equipment if any, identified as separate activities.

E. Dependencies (or relationships) between activities.

F. Processing/approval of submittals and shop drawings for major equipment. Activities that are dependent on submittal acceptance and/or material delivery shall not be scheduled to start earlier than the expected acceptance or delivery dates.

G. Separate buildings and other independent project elements shall be individually identified in the network.

H. No less than fourteen (14) days for developing punch list(s), completion of punch list items, and final clean up for the work or any designated portion thereof. No other activities shall be scheduled during this period.

I. Interface with the work of other Contractors (or entities).

The District Representative will review the proposed Contract Schedule for conformance with the requirements of the Contract. Within ten (10) days after receipt, the District Representative will accept the proposed Contract Schedule or will return it with comments. If the proposed Contract Schedule is not accepted, the Contractor shall revise the schedule to incorporate comments and resubmit the schedule for acceptance within seven (7) days after receiving it. The accepted schedule shall become the Contract Schedule.

The Contract Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. The responsibility for developing the Contract Schedule and monitoring actual progress as compared to the schedule rests with the Contractor.

Failure of the Contract Schedule to include any element of the work or any inaccuracy in the Contract Schedule will not relieve Contractor from responsibility for accomplishing all the Work in accordance with the Contract.

Acceptance of the Contract Schedule will not relieve the Contractor of the responsibility for accomplishing the Work in accordance with the Contract.

Failure to obtain the accepted Contract Schedule within forty (40) calendar days of the Notice to Proceed may result in the District withholding ten percent (10%) of each progress payment, or $1000, whichever is greater, until an accepted Contract Schedule is obtained. Any such amounts withheld shall be paid to Contractor upon approval of the Contract Schedule.

Section 13.03. Monthly Updates.
Contractor shall submit to the District Representative each month an up-to-date status report of the Work. The status report shall be in hard copy and in electronic format through the District's PMIS and shall include:

A. Contractor's estimated percentage complete and remaining duration for each activity not yet complete.
B. Actual start/finish dates for activities as appropriate.
C. Identification of processing errors, if any on the previous update reports.
D. Revisions, if any, to the assumed activity durations including revisions for weather impact for any activities due to the effect of the previous update on the schedule.
E. Identification of activities that are affected by requested or proposed changes to the Work.
F. Resolution of conflict between actual work progress and schedule logic. When out of sequence activities develop in the Contract Schedule because of actual construction progress, the Contractor shall submit revision to schedule logic to conform to current status and direction.

The District Representative will review the updated information and meet with Contractor each month at the Site to determine the status of the Work. If agreement cannot be reached on any issue, the Contractor will use the District Representative's determination in the processing of the update.

Progress payments pursuant to the Contract will be based on the update of the Contract Schedule. No progress payments will be made without the required monthly update of the Contract Schedule.

Section 13.04. Schedule Revisions.
If the sequence of construction differs significantly, as determined by the District Representative, from the Contract Schedule, Contractor shall submit within fifteen (15) days a revised schedule to the District Representative for approval.

When a requested or proposed change to the Work will have an impact on the critical path, the Contractor shall submit a schedule fragnet showing this impact. If the requested or proposed change is accepted by the District, the schedule fragnet shall be incorporated into the Contract Schedule. Time extensions will be considered only to the extent there is insufficient remaining float to accommodate these changes, and pursuant to Article 14 of these General Conditions. No additional cost beyond that provided in Article 15 will be allowed for the incorporation of approved changes into the Contract Schedule.

Should the Contractor, after acceptance of the Contract Schedule, intend to change its plan of construction, it shall submit its requested revisions to the District Representative, along with a written statement of the revision, including a description of the logic for rescheduling the work, methods of maintaining adherence to Intermediate milestones and other specific dates and the reasons for the revisions. If the requested changes are acceptable to the District Representative, they will be incorporated into the Contract Schedule in the next reporting period.

Schedule revisions shall be submitted at least seven (7) days prior to the date of submission of update information. The District will have seven (7) days to review the revisions.

Section 13.05. Short Interval Schedules.
Contractor shall prepare a Short Interval Schedule (SIS) to be used throughout the duration of Work. The SIS shall include all current activities and projected activities for the succeeding two (2) weeks. The SIS shall include actual start/finish dates for the preceding one (1) week. The SIS shall be submitted in hard copy and electronic PDF format to the District Representative prior to the weekly construction meeting. The Contractor shall participate in short interval scheduling coordination during the weekly construction meetings.

Section 13.06. Owner's Right to Revise Schedule.
In the event of a delay affecting the occupancy date of the Project and not the fault of the Contractor, the District Representative may elect to resequence work or otherwise modify the schedule in an attempt to maintain the Date of

Completion. It shall be the responsibility of the Contractor to cooperate in this effort. It is not the District's responsibility to ensure the Contractor the ability to use "optimal" crew size throughout the Project and no adjustment of the Contract Sum will be made for minor variations in crew size or claimed loss of efficiency or disruption that result from schedule adjustments. However, overtime work or weekend work required by the District Representative to meet schedule objectives other than those of the individual contractor will be reimbursed per the provisions of Article 15, provided that Contractor has not contributed to the delay which the District Representative is seeking to overcome. If the Contractor contends that a schedule adjustment will cause a significant disruption of its work sequence or ability to perform work efficiently, it shall notify the District Representative within forty-eight (48) hours of receipt of the adjustment. Failure to provide timely notice constitutes a waiver by Contractor of any claim for compensation arising out of the schedule adjustment.

Section 13.07. Commencement of Work.
The Contractor shall commence procurement of long lead materials and equipment after execution of the Agreement for Construction and appropriate Submittals have been approved.

Section 13.08. Time of Essence.
Time is of the essence of this agreement. The Contractor shall, to the fullest extent possible, carry on the various classes or parts of the Work concurrently, and shall not defer construction of any portion of the Work in favor of any other portion of the Work, without the express approval of the District Representative.

Section 13.09. Date of Completion.
The Contractor shall fully and satisfactorily complete the Work within the Contract Time. The Date of Completion is defined in Article I.

Section 13.10. Responsibility for Completion.
The Contractor shall furnish sufficient manpower, materials, facilities and equipment and shall work sufficient hours, including night shifts, overtime operations, Sundays and holidays as may be necessary to insure the prosecution and completion of the Work in accordance with the Contract Time. If work on the critical path is seven (7) days or more behind the currently updated Contract Schedule and it becomes apparent that the Work will not be completed within the Contract Time, the Contractor will implement whatever steps it deems necessary to make up all lost time. If the Contractor's solution is not successful, it will make further attempts using the following sequence of events:

A. Reschedule activities to achieve maximum practical concurrence of accomplishment of activities.
B. If the above cannot be achieved then;

1. The Contractor shall increase manpower in such quantities and crafts as will substantially eliminate, in the judgment of the District Representative, the backlog of work; or increase the number of working hours, shifts per working day, working days per week or the amount of equipment or any combination of the foregoing sufficiently to substantially eliminate in the judgment of the District Representative the backlog of work.
2. In addition, the District Representative may require the Contractor to submit a recovery schedule demonstrating its program and proposed plan to make up a lag in scheduled progress and to ensure completion of the Work within the Contract Time. If the District Representative finds the proposed recovery schedule unacceptable, it may require the Contractor to submit a new plan. If the actions taken by the Contractor or the second plan proposed are unsatisfactory, the District Representative may require the Contractor to take any of the actions set forth in the previous paragraph without additional cost to the District to make up the lag in scheduled progress.

Failure of the Contractor to comply with the requirements of this Section 13.09 shall be considered grounds for a determination by the District, pursuant to Article 12, Section 12.06D, that the Contractor is failing to prosecute the Work with such diligence as will ensure its completion within the time specified.

Section 13.11. Payments Withheld.
Progress Payments may be withheld in whole or in part should the Contractor fail to comply with the requirements of this Article.

ARTICLE 14. DELAYS AND EXTENSIONS OF TIME

Section 14.01. Extensions of Time; Unavoidable Delays.
The Contractor shall not be granted an extension of time except on the issuance of a Change Order by the District, upon a finding of good cause for such extension.

A. As used herein, the following terms shall have the following meanings:

1. "Excusable Delay" means any delay in completion of the Work beyond the expiration of the Contract Time caused by conditions beyond the control and without the fault or negligence of the Contractor. These events may include strikes, embargoes, fire, unavoidable casualties, national emergency, and stormy and inclement weather conditions in which the District Representative and Project Inspector agree that work on the critical path cannot continue. The financial inability of the Contractor or any Subcontractor or supplier and any default of any Subcontractor, without limitation, shall not be deemed conditions beyond the Contractor's control. An Excusable Delay may entitle the Contractor to an extension of the Contract Time, in accordance with this Section of the general conditions, but shall not entitle the Contractor to any adjustment of the Contract Sum.

2. "Compensable Delay" means any delay in the completion of the Work beyond the expiration date of the Contract Time caused solely by the wrongful acts of the District or its agents, including without limitation the Architect, and which delay is unreasonable under the circumstances and not within the contemplation of the parties. A Compensable Delay entitles the Contractor to an extension of the Contract Time, in accordance with this Section of the General Conditions, and/or an adjustment of the Contract Sum for increased general conditions costs, not to exceed **One Thousand Five Hundred Dollars ($1,500)** per day of delay, in accordance with Article 15. Notwithstanding the foregoing, Contractor shall not be entitled to any additional general conditions costs if Contractor is concurrently performing another increment or phase of the Project Work and the general conditions costs would be incurred in connection with that other increment or phase. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay, interruption, hindrance, or disruption.

3. "Inexcusable Delay" means any delay in completion of the Work beyond the expiration of the Contract Time resulting from causes other than those listed in Subparagraphs A1 and A2, above. An Inexcusable Delay will not entitle the Contractor to an extension of the Contract Time or an adjustment of the Contract Sum.

B. The Contractor may make a claim for an extension of the Contract Time, for an Excusable Delay or a Compensable Delay, subject to the following:

1. If an Excusable Delay and a Compensable Delay occur concurrently, the maximum extension of the Contract Time shall be the number of days from the commencement of the first delay to the cessation of the delay which ends last. Any adjustment of the Contract Sum shall be in accordance with Article 15, shall not exceed **one thousand, five hundred dollars ($1,500)** per day, and shall be based only on the non-concurrent portion of any Compensable Delay.

2. If an Inexcusable Delay occurs concurrently with either an Excusable Delay and/or a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, by which the duration of the Excusable Delay and/or the Compensable Delay calculated in accordance with subparagraph B1, if applicable, exceeds the Inexcusable Delay. The duration of the concurrence is non-compensable.

Delays in the prosecution of parts or classes of the Work which do not prevent or delay the completion of the whole Work within the Contract Time are not to be considered Excusable or Compensable.

Section 14.02. Notice of Delays; Requests for Time Extensions.
No later than ten (10) calendar days from the time the Contractor reasonably foresees any delay in the prosecution of the Work, and in any event immediately upon the occurrence of any delay which the Contractor regards as good cause for an extension, the Contractor shall notify the District Representative in writing of the delay or anticipated delay. The notice shall specify with detail the cause asserted by the Contractor to constitute good cause for an extension together

with a detailed schedule analysis showing the effect of the delay on the critical path of the Contract Schedule and a quantification of the length of the requested extension of time. **Failure of the Contractor to submit such a notice within ten (10) days after the initial occurrence of the event giving rise to the delay shall constitute a waiver by the Contractor of any entitlement to a time extension**, as well as to any associated additional compensation, and no extension shall be granted as a consequence of such delay. If the Contractor cannot quantify the delay or prepare a detailed schedule analysis at the time the notice of delay is submitted, including because the delay is anticipated and/or is ongoing of an unclear duration, then the Contractor shall supplement its notice of delay as soon as it can reasonably quantify the delay, but no later than ten (10) days after the cause for delay is concluded.

The District shall have no obligation to consider any non-compliant time extension request. The District shall not be responsible or liable to the Contractor for any constructive acceleration due to failure of the District to grant time extensions under the Contract Documents, should the Contractor fail to comply with the submission and justification requirements of the Contract Documents for time extension requests. The Contractor's failure to perform in accordance with the Contract Schedule shall not be excused because the Contractor has submitted time extension requests, unless and until such requests are approved by the District.

Section 14.03. Investigation; Procedure.
Upon receipt of a request for extension, the District Representative shall conduct an investigation of the facts asserted by the Contractor to constitute good cause for an extension. The District Representative shall report the results of this investigation, as well as the propriety of the time extension requested, to the Contractor in writing within ten (10) days of receipt of the complete request, including quantification of the delay, and shall indicate whether it will recommend for or against the extension.

Upon receiving the District Representative's recommendation, the Contractor may either concur in the recommendation, or reject the recommendation and proceed with a claim as provided for in Articles 21 and 23.

Section 14.04. Discretionary Time Extensions for Best Interest of District.
The District reserves the right to extend the time for completion of the Work if the District determines that such extension is in the best interest of the District. In the event that a discretionary extension is granted at the request of the Contractor, the District shall have the right to charge to the Contractor all or any part, as the District may deem proper, of the actual cost of construction management, engineering, inspection, supervision, incidental and other overhead expenses that accrue during the period of the extension, and to deduct all or any portion of that amount from the final payment for the Work.

In the event a discretionary time extension is ordered over the objection of the Contractor, and the decision rests solely with the District and is not legally compelled for any cause, the Contractor shall be entitled to a contract change pursuant to Article 15 adjusting the price paid to reflect the actual costs incurred by the Contractor as a direct result of the delay, upon its written application therefore, accompanied with such verification of costs as the District Representative requires. The decision of the District on any discretionary time extension and the costs thereof shall be final and binding on the District and the Contractor.

Section 14.05. Liquidated Damages.
If the Work or any specified portion or phase of Work is not completed by the Contractor in the time specified in Section 00 73 00, Special Provisions, or within any period of extension authorized pursuant to this Article, the Contractor acknowledges and admits that the District will suffer damage, and that it is impracticable and infeasible to fix the amount of actual damages. Therefore, it is agreed by and between the Contractor and the District that the Contractor shall pay to the District as fixed and liquidated damages, and not as a penalty, the sum specified in the Agreement for Construction for each calendar day of delay until the date of substantial completion and/or until the date of final completion, and that both the Contractor and the Contractor's surety shall be liable for the total amount thereof, and that District may deduct Liquidated Damages from any monies due or that may become due to the Contractor. If it appears during the course of construction that the Contractor is behind schedule and the imposition of liquidated damages is likely, or if liquidated damages begin to accrue prior to the time for final payment, the amount accrued shall be withheld from any progress payment that would otherwise be due. This right to withhold funds is intended to complement the District's rights under Section 12.06.

This liquidated damages provision shall apply to all delays of any nature whatsoever, save and except only delays found to be excusable or compensable pursuant to Section 14.01, or time extensions granted by the District pursuant to Section 14.04.

Pursuant to Government Code Section 4215, the Contractor shall not pay fixed and liquidated damages for delay in completing the project caused by the failure of the District or the owner of utility facilities located on the Project Site to provide for removal or relocation of such facilities.

Payment by the District of any progress payments after expiration of the Contract Time shall not constitute a waiver by the District of its right to claim liquidated damages in accordance with this Section.

If the Contract is terminated before or after the Contract Time, as adjusted by any extensions of time that the District may have granted, pursuant to Section 18.07, the Contractor shall remain liable to the District for liquidated damages for all periods of time from such termination date until the Date of Completion.

Section 14.06. Extension of Time Not a Waiver.
Any extension of time granted the Contractor pursuant to this Article shall not constitute a waiver by the District of, nor a release of the Contractor from the Contractor's obligation to perform this Contract in the time specified by the agreement, as modified by the particular extension in question.

The District's decision to grant a time extension due to one circumstance set forth in one request, shall not be construed as a grant of an extension for any other circumstance or the same circumstance occurring at some other time, and shall not be viewed by the Contractor as a precedent for any other request for extension.

Section 14.07. Suspensions Exceeding One Year.
Should the Work be suspended for a period exceeding one calendar year due to war conditions, labor conditions, legal actions, or for other conditions constituting the legal defense of impossibility of performance, the Contractor and District agree to enter into an agreement terminating the agreement upon the following terms and conditions.

District shall be responsible only to pay the Contractor the actual value of the work performed from the Date of Commencement or from the date of the last progress payment, whichever is later, plus the five percent (5%) retention from prior progress payments, less any deductions authorized by the Contract Documents.

As between the Contractor and District, it shall be conclusively presumed that the actual value for the Contractor's work to the date of the last progress payment is no more than the actual amount of prior progress payment plus the five percent (5%) retention from those progress payments; provided, however, that this Section shall not preclude District from deducting charges for work or materials which do not meet the requirements of the Contract Documents.

Section 14.08. Effect of Stop Work Notice.
If the District orders a stop work notice pursuant to Article 9, the days on which the suspension is in effect shall be included in determining the required completion date, and shall not otherwise modify or extend the time within which the Contractor is to perform. In such event, the Contractor shall not be entitled to any damages or compensation on account of such suspension or delay, unless the Contractor can establish that stop work notice was not warranted.

ARTICLE 15. CHANGES TO THE WORK

Section 15.01. No Changes Without Consent.
The Contractor will complete the Project for the Contract Sum except as provided below. The Contractor agrees, for itself and on behalf of its Subcontractors and suppliers, that no increase in the Contract Sum will be made for work that the Contractor or its Subcontractors and suppliers might otherwise claim as a Change Order or extra work unless the Contractor establishes that the additional cost is the result of one of the following:

a) a material change in the scope of work directed or authorized by District;
b) a change required by regulatory authorities (including inspections) that was not reasonably ascertainable from the Contract Documents;
c) regulatory fees not included in the Contract Sum;
d) Differing Site Conditions;
e) design errors; or
f) wrongful acts of District or a separate contractor employed by District, or by damage to the Work caused by fire or other unavoidable casualties not the fault of the Contractor or Subcontractors or suppliers.

No extra work shall be performed, and no change shall be made, except pursuant to a written Change Order or Proposed Change Order signed by the District, or by a Directive signed by either the District or the District Representative, stating that the extra work or change is authorized, and no claim for any addition to the Contract Sum or Contract Time shall be valid unless so authorized; provided, however, that nothing in this Article shall excuse the Contractor from proceeding with the prosecution of the work so changed. The Contractor shall, when required by the District Representative, furnish an itemized breakdown of the quantities and prices used in computing the value of any change requested by the Contractor, or that may have been ordered by the District, including all items listed in Sections 15.06 and 15.07, below.

Change Orders shall specify the cost adjustments associated therewith, and in no case shall the District pay or become liable to pay any sums different than those specified or those established under Section 15.06 and 15.07.

Certain CCDs must be submitted to, and approved by, DSA prior to being implemented. Substitutions may be considered CCDs and, if DSA approval is required, are to be approved by DSA prior to fabrication or use.

Section 15.02. Change Orders.
Subject to legal requirements relating to competitive bidding, the District may require changes in, additions to, or deductions from the work to be performed or the materials to be furnished pursuant to the Contract Documents. Changes may be made pursuant to a written Change Order signed by the District, which shall state the agreement of the District, the Contractor, the Architect, and, if applicable, DSA upon all of the following:

A. The scope of the 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.

If the Contractor believes that conditions have changed, or that it has been directed to do additional work requiring a change in time or cost, the Contractor may submit to the District Representative a Proposed Change Order (PCO).

All adjustments to the Contract Sum or the Contract Time must be approved by the District Board of Education.

Signature by the Contractor on the Change Order constitutes its agreement with and acceptance of the adjustments in the Contract Sum and Contract Time, if any, set forth in the Change Order as full and complete satisfaction of any direct or indirect additional cost and/or time incurred by the Contractor in connection with performance of the changed work.

Section 15.03. Not Used.

Section 15.04. Change Orders Regarding Time for Completion.
Any time extension authorized by the District pursuant to Article 14 hereof shall be set forth in a Change Order signed by the District.

Section 15.05. Construction Change Directive/Directive.
Changes also may be made pursuant to a Directive, which shall direct a change in the Work and state a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. A Directive shall be used in the absence of total agreement on the terms of a Change Order, or when time does not permit processing of a Change Order prior to implementation of the change. Directives shall be approved by the District, the Architect, and, if applicable, DSA, but need not be signed by the Contractor.

Upon receipt of a Directive, the Contractor shall promptly proceed with the change in the work involved. It is the intent of the District that all Directives will be converted to a Change Order.

When a Directive is used because time does not permit processing of a Change Order prior to implementation of the change, signature by the Contractor on the Directive constitutes its agreement with and acceptance of the adjustments in the Contract Sum and Contract Time, if any, set forth in the Directive as full and complete satisfaction of any direct or indirect additional cost and/or time incurred by the Contractor in connection with performance of the change work.

If the Contractor disagrees with the method for adjustment in the Contract Sum, the adjustment shall be determined by the District Representative on the basis of any of the methods described in Section 15.06A, paragraphs 2, 3, or 4.

Section 15.06. Pricing of Changes.

A. If a Change Order or Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

2. Unit prices stated in the Contract Documents or subsequently agreed upon;

3. The District Representative's estimate of the value of the change; or

4. Time and materials, as set forth in Section 15.07 and 15.08.

Section 15.07. Allowable Costs.

A. Allowable costs for any Change Order shall be limited to the following:

1. Costs of labor, including social security, Medicare, and unemployment insurance, fringe benefits required pursuant to Article 7, and workers' compensation insurance (unless covered by the OCIP);

2. Costs of first line supervision labor, including labor burden as described in Paragraph 1. "First Line Supervision" shall mean a working foreman or lead craft worker other than the project superintendent;

3. Actual cost of the project superintendent associated with any period of compensable delay caused by issuance of the change order. In the absence of a compensable delay, all of the project superintendent's time is considered to have been paid for as part of the Overhead;

4. Actual costs of materials, including sales tax and delivery;

5. Rental costs of machinery and equipment, exclusive of small tools, whether rented from the Contractor or others;

6. Overhead and Profit as specified below. "Overhead" shall include the following:

Preparation of all paperwork related to changes in the Work, including field review, estimating and cost breakdown; coordination and supervision, both office and field, including the project superintendent; vehicles including gas and maintenance; small tools, incidentals and consumables; engineering, detailing, and revisions to shop drawings and as-built drawings; general office and administrative expense; extended and unabsorbed home office overhead; warranty; costs of bonds, liability insurance and Builder's Risk insurance (unless covered by the OCIP), and all taxes; and all other expenses not specifically included in Paragraph A above.

B. The Contractor's combined overhead and profit for work performed by its own forces shall be fifteen percent (15%) of the costs specified in Section 15.07(A)(1)-(5). If the changed work is performed by a Subcontractor, the Subcontractor shall be entitled to an allowance of fifteen percent (15%) of its actual labor, material and rental costs for overhead and profit. The Contractor shall be allowed to mark-up the Subcontractor's price ten percent (10%) for its overhead and profit. Cumulative total markup for all tiers of contractors and subcontractors shall not exceed twenty-five percent (25%).

C. If the net value of a change results in a credit from the Contractor or Subcontractor, the credit shall be the actual net cost, plus five percent (5%) for overhead and profit. When both additions and credits covering related work or substitutions are involved in any one change, the allowance for Overhead and Profit shall be figured on the basis of the net increase or decrease, if any, with respect to the change.

Section 15.08. Time and Materials Adjustment.

A. Pricing and Record Keeping. In the event that the pricing method selected is the time and materials method described in Section 15.06A, paragraph 4, the pricing shall be calculated using the formula and costs set forth in Section 15.07 except that time and material (T & M) labor rates shall be pre-approved by the District Representative for T & M work. The Contractor shall keep and present daily, in such form as the District Representative may prescribe, an itemized accounting together with appropriate invoices and other supporting data of the labor, materials, and equipment used during that day. All labor shall be recorded on separate time sheets clearly identified with the Directive number and scope of extra work involved. These time sheets shall be signed daily by the Project Inspector or the District Representative. No costs will be allowed for time not recorded and signed the same day the work takes place. The Contractor and the District Representative shall discuss and attempt to resolve any disputes concerning the Contractor's daily records at the time the report is submitted.

B. Reconciliation. The Contractor shall, on a monthly basis accompanying the progress payment request, submit a reconciliation for all work performed under a time and materials Directive during the period of the progress payment. A final reconciliation shall be submitted within 30 days after the work of the Directive is completed. The reconciliation shall recap all costs and appropriate markups for the period. No costs will be allowed for work not included in a reconciliation within the time periods specified.

Section 15.09. Effect on Sureties.

All changes authorized by the Contract Documents may be made without notice to or consent of the sureties on the contract bonds, and shall not reduce the sureties' liability on the bonds.

The District reserves the right to require additional payment or performance bonds to secure a Change Order.

Section 15.10. Unforeseen Site Conditions.

If this Contract requires the digging of trenches or other excavations that extend deeper than four feet below the existing surface, the following provision shall apply to those trenches or excavations:

A. In the event that any of the following described conditions is suspected to exist in the trench or excavation, the Contractor shall promptly, and before the condition is disturbed, notify the District Representative, in writing, of any:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

2. Subsurface or latent physical conditions at the Site differing materially from those indicated in the Contract Documents.

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

B. Upon receipt of notice from the Contractor, the District Representative, the District and the Architect shall promptly investigate the conditions, and if it is determined that the conditions do materially so differ or 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 Directive under the procedures described in the Contract Documents.

C. In the event that a dispute arises between the District and the Contractor as to whether the conditions materially differ, or 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 Documents, but shall proceed with all work to be performed under the Contract Documents. The Contractor shall retain any and all rights provided either by the Contract Documents or by law which pertain to the resolution of disputes and protests between the contracting parties.

D. No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice under paragraph A of this Section 15.10.

E. No contract adjustment will be allowed under the provisions specified in this section for any effects caused on unchanged work.

As between the Contractor and the District, the District is responsible for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Site if such utilities are not identified in the Plans and Specifications. If the Contractor, while performing its work, discovers utility facilities not identified in the Plans or Specifications, it shall immediately notify the District and the associated utility in writing. Thereafter, and provided it has given such notice, the Contractor shall be entitled to an adjustment of the Contract Sum and an extension of the Contract Time, in accordance with Articles 14 and 15, for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Plans and Specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work when such costs and time are caused by the failure of the District or the owner of the utility to provide for removal or relocation of such utility facilities. Notwithstanding anything to the contrary herein, the District is not required 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, meter and junction boxes, on or adjacent to the Site. Nothing herein shall preclude the District from pursuing any appropriate remedy against the utility for delays which are the responsibility of the utility.

Section 15.11. Notice of Dispute

If the Contractor intends to make a claim for a change in the Contract Sum or Contract Time, the Contractor must give the District Representative written notice within ten (10) days of the occurrence of the event giving rise to the claim. Thereafter, the Contractor may proceed with a claim as provided for in Articles 21 and 23. **Failure to provide the written notice within ten (10) days of the occurrence of the event giving rise to the claim shall constitute a waiver by the Contractor of any claim for a change in the Contract Sum or Contract Time.**

ARTICLE 16. DISTRICT'S RIGHT TO CARRY OUT THE WORK

Section 16.01. Notice of Default; Deduction of Cost.
If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within three (3) days after receipt of written notice from the District to commence and continue correction of the default or neglect with diligence and promptness, the District may, without prejudice to any other remedy it may have, correct the deficiencies and may further elect to complete that portion of the Work through such means as the District may select, including the use of a new contractor. In such case, an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting the deficiencies, and any other appropriate costs, including compensation for the Architect's, the Project Inspector's, and the District Representative's additional services made necessary by the default, neglect, or failure. If the payments then or thereafter due the Contractor are not sufficient to cover that amount, the Contractor shall pay the difference to the District.

Section 16.02. Disputed Work.
If a dispute arises as to who is responsible for cleaning up pursuant to Section 19 or for accomplishing coordination or doing required cutting, filling, excavating, or patching, the District may carry out such work and charge the cost to the responsible contractors, as the District may determine.

Section 16.03. Assignment of Work.
The District reserves the right to perform any portion of the Project with its own forces or with other contractors as it sees fit. The Contractor will cooperate and coordinate with the District's efforts in this regard. The Contractor may be assigned work by other District contractors when required to properly coordinate project activities.

ARTICLE 17. REJECTION AND REPLACEMENT OF WORK AND MATERIALS

Section 17.01. Rejection of Materials and Workmanship.
The District shall have the right to reject materials and workmanship which are determined by the District Representative, the Architect, or the Project Inspector to be defective or fail to comply with the Contract Documents. Rejected workmanship shall be corrected to the satisfaction of the District and/or Architect, and rejected materials shall be removed from the premises and replaced, all without added cost to the District and/or an increase in the Contract Time.

If the Contractor does not correct such rejected work and/or materials within a reasonable time, fixed by the District Representative or the Architect in a written notice to the Contractor, the District may correct the same and charge the expense to the Contractor, and deduct such expense from the next progress payment otherwise payable to the Contractor.

If the District determines that it is in its best interest not to correct defective workmanship and/or materials, or work not done in accordance with the Contract Documents, the Contractor agrees that an equitable deduction from the Contract Sum shall be made therefor, and deducted from the next progress payment otherwise payable to the Contractor.

Section 17.02. Correction of Work.
The Contractor shall promptly correct all work rejected by the District Representative, Project Inspector, or the Architect as defective or as failing to conform to the Contract Documents, whether observed before or after final completion and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected work including compensation for the Architect's, Project Inspector's, and the District Representative's additional services.

If within two (2) years after the Date of Completion and acceptance of the Work or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct any or all such work, together with any other work which may be displaced in so doing, without expense to the District, promptly after receipt of a written notice from the District unless the District has previously given the Contractor a written acceptance of such condition. The District shall issue a correction notice promptly after discovering the condition. The Contractor shall notify the District upon completion of repairs. This obligation shall survive termination of the Contract with respect to work in place prior to termination.

The Contractor shall bear the cost of making good work destroyed or damaged by such correction or removal.

Nothing contained in this Section shall be construed to establish a period of limitation with respect to any other obligations which the Contractor might have under the Contract Documents or by operation of law. The establishment of the time period of two (2) years after the Date of Completion, or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents, relates only to the specific obligation of the Contractor to correct the Work and has no relationship to the time within which an action may be commenced to establish the Contractor's liability with respect to its obligations other than specifically to correct the work.

ARTICLE 18. DISTRICT'S RIGHT TO TERMINATE CONTRACT

Section 18.01. Termination by the District for Convenience.
The District may at any time and for any reason, terminate, in whole or in part, Contractor's Work at the District's convenience. Termination shall be by written notice to Contractor. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue Contractor's work and the placing of orders for materials, facilities, and supplies in connection therewith, and shall, if requested, make every reasonable effort to procure cancellation of all existing orders or contracts upon terms satisfactory to the District, or, at the option of the District, the District shall have the right to assume those obligations directly, including all benefits to be derived therefrom. Contractor hereby assigns to the District all of its interest in said orders and/or contracts, and the assignment of said orders and/or contracts shall be effective upon notice of acceptance by the District in writing, and only as to those orders and/or contracts which the District designates in writing. Following receipt of notice of termination, Contractor shall thereafter do only such work as may be necessary to preserve and protect portions of its work already in progress and to protect materials and equipment on or in transit to the Project.

Upon such termination, Contractor shall be entitled to payment only as follows: (1) Contractor's direct, actual cost of the Work allocable to the portion of the Work completed in conformity with the Contract, but in no event to exceed the amount of the Contract Sum allocable to the portion of the Work completed in conformity with the Contract; plus (2) previously unpaid costs of any items delivered to the Project Site which were fabricated for subsequent incorporation in the Work, but in no event to exceed the portion of the Contract Sum allocable to said items; plus (3) an allowance of ten percent (10%) of the foregoing costs for Contractor's overhead and profit; plus (4) any proven losses with respect to materials and equipment directly resulting from the termination; plus (5) reasonable demobilization costs. Contractor is required to incorporate these terms into its subcontracts, so no costs of terminating subcontracts other than as specified herein will be permitted. The costs referred to in this Section shall be calculated and documented as required for a change order under Article 15 of the General Conditions, except that mark-up for overhead and profit shall be only as allowed by this Section. There shall be deducted from such sums the amount of any payments made to Contractor prior to the date of the termination of this Contract. Contractor shall not be entitled to any claim or claim of lien against the District for any additional compensation or damages in the event of such termination and payment beyond that provided for in this Section.

In connection with any termination for convenience, Contractor shall allow the District, District Representative or any authorized representative(s) to inspect, audit, or reproduce any records to the extent necessary for the District or District Representative to evaluate and verify the costs incurred by Contractor in performing the Work, including direct and indirect costs such as overhead allocations. Contractor will make this material available upon 48-hours' written notice from the District or District Representative. The District and District Representative may inspect and copy, from time to time and at reasonable times and places, any and all information, materials, and data of every kind and character (hard copy as well as electronic data), including without limitation, books, papers, documents, subscriptions, recordings, estimates, price quotations, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers, monthly, quarterly, yearly or other financial statements, and any and all other information or documentation that may, in the judgment of the District or District Representative, have any bearing on or pertain to any matters, rights, duties, or obligations under or covered by the Contract Documents. Such records shall include but not be limited to, the following: accounting records, payroll records, job cost reports, job cost history, margin analysis, written policies and procedures, subcontract files (contracts, correspondence, change order files, including documentation covering negotiated settlements), back charge logs and supporting documentation, general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends, and any other documents customarily maintained by contractors performing work on public works projects or that the District or District Representative otherwise deem necessary to substantiate charges related to a Termination.

If this Contract is terminated for default under Section 18.02 and if it is later determined that the default was wrongful, such default termination automatically shall be converted to and treated as a termination for convenience under this Section. In such event, Contractor shall be entitled to receive only the amounts payable under this Section, and Contractor specifically waives any claim for any other amounts or damages, including any claim for consequential damages or lost profits.

Section 18.02. Termination by the District for Cause.
The District may terminate the Contract, pursuant to the provisions of this Article, for the following causes:

A. The Contractor is insolvent or has made a general assignment for the benefit of creditors, or a receiver has been appointed on account of the insolvency of the Contractor.

B. The Contractor or any of its Subcontractors materially violate any of the provisions of the Contract Documents or fail to perform the work within the time specified in the current Contract Schedule.

C. The Contractor or any of its Subcontractors should fail to make prompt payment to Subcontractors or material suppliers for material or for labor as required by statute.

D. The Contractor or a Subcontractor persistently disregards laws, ordinances, or the instructions of the District Representative, Architect, or the District.

E. The Contractor fails to abide by a stop work notice issued pursuant to Article 9 or fails to correct rejected work or materials as required by Article 17.

F. The Contractor fails to provide and keep in full force and effect all insurance required by Article 3, or fails to cause all Subcontractors to so comply.

G. The Contractor fails to supply a sufficient number of properly skilled workers or proper materials to timely complete the Work.

H. The Contractor commits any violation of the terms and conditions of the Contract Documents which the District, in its sole discretion, finds to be a material breach of the Contract.

Section 18.03. Procedure for Termination for Cause.
The District may, without prejudice to any other right or remedy, give written notice to the Contractor and its surety or sureties of its intention to terminate the Contract.

Unless the Contractor shall cease such violation and make satisfactory arrangements for a correction thereof within seven (7) days of the delivery of such notice, or such longer period specified in the notice, which arrangements are set forth in a written agreement signed by the Contractor and the District Representative, the Contractor's right to complete the Work shall cease and terminate.

In the event of any such termination, the District shall immediately give written notice thereof to the surety and to the Contractor and the surety shall have the rights and obligations set forth in the performance bond. If the District is forced to take over the Work, it may prosecute the same to completion by contract or by any other method it may deem advisable, for the account and at the expense of the Contractor, and the Contractor and its sureties shall be liable to the District for any excess costs, including management, supervision, and design support, occasioned thereby. In such event, the District may, without liability, take possession of, and utilize in completing the Work, the Contractor's materials whether stored at the Site or elsewhere, that are necessary for completion. Contractor hereby assigns to the District all of its interest in orders and/or contracts existing at the time of termination. The assignment of said orders and/or contracts shall be effective upon notice of acceptance by the District in writing, and only as to those orders and/or contracts which the District designates in writing. Whenever the Contractor's right to proceed is terminated, the Contractor shall not be entitled to receive any further payment until the Work is finished and shall be liable to the District for liquidated damages for all periods of time from such termination date until the Date of Completion, as well as for all losses incurred by the District in completing the Work.

Section 18.04. Not Used.

Section 18.05. Not Used.

Section 18.06. Survival of Obligations.
No termination of this Contract or of Contractor's Work shall excuse or otherwise relieve the Contractor of its responsibilities under the Contract Documents with respect to any Work performed prior to the date of termination, including, without limitation, its obligation to perform the Work in a good and workmanlike manner, free of defects, and in accordance with the Contract Documents, its warranty obligations with respect to the Work, and its obligation to make all payments due. All of Contractor's responsibilities under the Contract Documents with respect to the Work performed prior to the date of termination shall survive any termination.

Section 18.07. Termination After Contract Time.
In addition to any rights it may have, the District may terminate this Contract at any time after the Contract Time, as adjusted by any extensions of time that the District may have granted.

Upon such termination, in addition to the Contractor's obligations under Section 18.06 and the other provisions of the Contract Documents, the Contractor shall not be entitled to receive any compensation for services rendered before or after such termination until the Work is completed, and the Contractor shall be liable to the District for liquidated damages for all periods of time from the Contract Time, adjusted by any extensions of time that the District may have granted, until the Date of Completion, as well as for all losses incurred by the District in completing the Work.

ARTICLE 19. PRESERVATION AND CLEANING

Section 19.01. Periodic Cleaning of Project.
The Contractor shall properly clean its work and the Site, and maintain its work area in an orderly manner. The Contractor shall remove all dirt, debris, waste, rubbish, and implements of service from the Project, the adjacent sidewalks and streets, and the working area daily or as directed by the District Representative. Debris, waste, or unused construction materials shall not be left under, in, or about the Project, nor allowed to accumulate on the Site or in the working area.

The Contractor, at its sole cost, shall contract with a disposal company to remove all rubbish, and shall have the refuse containers emptied at frequent enough intervals so that waste does not overflow the containers.

If the Contractor fails to clean up during progress or upon completion of the Work, the District may, at the Contractor's expense, do so as provided in Article 16.

Section 19.02. Final Cleaning of Project.
At completion of the Work and prior to final acceptance/inspection and occupancy by the District, the Contractor shall thoroughly clean the interior and exterior of the buildings, and the Site and adjacent areas, of all material related to its performance of the Work. In the event the Contractor fails to do so, the District may cause this work to be done at the Contractor's expense, as provided in Article 16. The following list is not inclusive but to act as a guideline:

A. Removal of all spots, stains, paint spots, rubbish, debris, tools, equipment, trade markings and labels, and accumulated dust and dirt from all areas and broom clean. Steam clean all carpets and mop floors.

B. Cleaning interior and exterior of the buildings including all windows in any area affected by the Work.

C. Brush off, broom sweep, dust and clean ledges, stairs, doors, hardware, chalk board trays and any adjoining rooms or areas that were affected by the Work.

D. The Contractor shall clear grounds and exterior paved areas and walks of all construction debris, dirt and dust and shall repair any Site areas damaged during the course of construction.

Prior to final completion or District occupancy, the Contractor shall conduct an inspection of sight-exposed surfaces, and all work areas, to verify that the entire work is clean. In the event the Contractor fails to do so, the District may cause this work to be done at the Contractor's expense.

ARTICLE 20. COMPLETION, INSPECTION, AND OCCUPANCY BY DISTRICT

Section 20.01. Notice of Punch List Inspection.
When the Contractor believes that the entire work, or a specific phase of its Work, is substantially complete, *i.e.,* fit for its intended use, the Contractor shall certify in writing to District that the Work is substantially complete and request that District grant substantial completion. Within five (5) working days of the receipt of such request, the District Representative, the Project Inspector, and the Architect shall make a punch list inspection or inform the Contractor that the work is not ready for punch list inspection; upon completion of the deficient work, the Contractor shall again request a punch list inspection. The Contractor shall be present at the punch list inspection. The purpose of the punch list inspection is to determine whether the Work has been substantially completed in accordance with the Contract Documents, including all Change Orders, interpretations, and instructions previously issued.

If the Contractor requests a punch list inspection when the Work is not ready for the inspection, the Contractor shall pay all costs associated with the inspection.

If Contractor fails to attend any punch list inspection, the Contractor shall be charged for the cost of the District Representative, Architect, the Project Inspector, and other design professionals and District consultants who attended the punch list inspection.

Completion of any phase of the Work does not result in final completion, or in any way alter the payment provisions after final completion.

Section 20.02. Punch List.
The District Representative, the Project Inspector, and the Architect shall notify the Contractor in writing of any deficiencies to be remedied prior to final acceptance by preparing a written “punch list” of work required to be completed or corrected prior to final completion.

When the Contractor believes it has remedied all items shown on the punch list, it shall notify the District Representative that it is ready for inspection for final acceptance by the District Representative, the Project Inspector, and the Architect. In the event that the Work still does not comply with the Contract Documents, the District reserves the right to issue such further punch lists as may be required, or to deduct from the final payment the cost of correcting any work not completed in accordance with the Contract Documents, but accepted by the District, without the issuance of further punch lists. If the District issues a further punch list, the Contractor shall be responsible for all costs of subsequent punch list inspections required prior to acceptance.

No one is authorized to amend the Contract Documents by use of the punch list; it is provided solely for the benefit of the Contractor to enable it to determine what items must be corrected before final acceptance will be recommended by the District Representative, the Project Inspector, and the Architect. The District reserves the right to require compliance with the Contract Documents, notwithstanding the issuance of a punch list or the completion by the Contractor of all items on the punch list.

If punch list work needs to be performed after the District has taken occupancy of a phase or the entire Work, then the Work shall be conducted outside of normal school hours at the direction of the District Representative.

Section 20.03. Use of Work Prior to Acceptance.
Whenever, in the opinion of the District, the Work, or any part thereof, is in a condition suitable for use, and the best interests of the District require such use, the District may take possession of and use that portion of the Work. District shall provide Contractor not less than ten (10) days’ notice of such possession or use, and shall make reasonable efforts to conduct a punch list inspection of the Work to be occupied prior to occupancy.

The District’s occupancy shall not constitute acceptance by the District of the Work or any part thereof. Such use shall neither relieve the Contractor of any of its responsibilities under the Contract Documents, nor act as a waiver by the District of any of the terms or conditions of the Contract Documents. Any damage done by the District is the responsibility of the District. Contractor acknowledges and agrees that any occupancy and/or use of all or any portion of the work of improvement does not constitute acceptance or completion within the meaning of California Civil Code section 9200.

Section 20.04. Repairs or Renewal in the Work.
Prior to the Date of Completion, the Contractor shall make all repairs or renewals in the portion of the Work occupied pursuant to Section 20.03 made necessary due to defective material or workmanship, or the operations of the Contractor, ordinary wear and tear excepted.

Section 20.05. Not Used.

Section 20.06. Coordination with Other Activities.
The Contractor shall conduct its operations so as not to interfere unreasonably with the District's use of the occupied portions of the Site. The Contractor shall submit periodic schedules to the District Representative proposing the times, areas, and types of work to be done within such areas.

If the Work produces conditions rendering the occupied portions of building, the Site, or other areas uninhabitable, either because of noise, dust, vibration, smoke, fumes, or for any other cause whatsoever, the District Representative may suspend the Work or direct the Contractor to modify the Contract Schedule, and the Contractor shall comply.

Except as provided by Change Order, the Contractor shall not be entitled to a time extension or increase in the Contract Sum by virtue of conflicts between the Contractor's work and the District's occupancy.

ARTICLE 21. CONTRACT CLOSEOUT

Section 21.01. Contractor's Request for Final Payment.
When the Contractor determines that all of the Work on the Project is complete and all items on the punch list have been satisfied, or contends that such items are not required by the Contract Documents, the Contractor shall submit a certificate of completion and an application for final payment on the form provided.

Section 21.02. Additional Submissions.
Simultaneously with the Contractor's certificate of completion and request for final payment, the Contractor shall submit the following items to the District Representative:

A. As-built drawing information pursuant to Section 5.08.

B. One (1) original set of documentation and one (1) PDF file(s) in electronic format on a separate flash drive completely covering the operation and maintenance of the mechanical and electrical installation, elevators, kitchen equipment, and all other equipment required by the technical specifications to be furnished with such manuals. The documentation shall include charts, diagrams, performance curves, catalog information, lubrication manuals, and details pertaining to the functioning of various items of equipment. The documentation shall be divided logically into "systems" on the basis of operation, without respect to trades, subcontractors, or arbitrary specifications sections. The relationship of the "systems" shall be clearly and concisely detailed.

C. Hazardous material documentation as required.

D. Form DSA-6 Final Verified Reports.

E. DVBE Compliance Report in the form required by the District documenting and certifying the amount of Work performed by DVBEs.

F. All other required DSA, California Department of Education, State Allocation Board and Office of Public School Construction forms.

G. Any extra stock material and equipment and manufacturer warranties/guarantees as required by the Contract Documents.

H. Other items as required in Section 00 73 00.

No payment will be processed unless accompanied by the above listed submissions in acceptable form, *except that,* if the **only** missing document is the DVBE Compliance Report, then the District will withhold no more than ten thousand dollars ($10,000) from the final payment due to the missing Report.

In accordance with Military & Veterans Code section 999.7, District will withhold ten thousand dollars ($10,000) from the final payment, or the full final payment if less than ten thousand dollars ($10,000), until Contractor submits the required DVBE Compliance Report. If Contractor fails to provide the Report after being provided written notice of its failure to submit the Report, within the time required by the notice, then District shall permanently deduct ten thousand dollars ($10,000) from the final payment, or the full payment if less than ten thousand dollars ($10,000).

Section 21.03. Final Payment Process.
Upon approval of the submittals required by this Article and receipt of the Contractor's final payment application, and upon verification that all of the Work is complete, including all punch list items, the District Representative shall either (1) recommend to the District that the payment application be accepted, which recommendation shall be made within five (5) business days of receipt of the Contractor's complete final payment application, or (2) send a notice to the Contractor rejecting the payment application, stating the basis therefor, and submitting a written estimate of the sum due to the Contractor, which written estimate shall be provided to the Contractor within twenty (20) calendar days of the District Representative's receipt of the Contractor's final payment application. If the payment application is rejected in part due to a missing DVBE Compliance Report, then the District Representative's response shall notify the Contractor that (a) the missing Report must be provided by a date certain, no less than 15 days and no more than 30

calendar days following the date of the notice and (b) failure to provide the Report will result in a $10,000 permanent deduction from the final payment. The District Representative's estimate shall take into account the Contract Sum, as adjusted by any Change Orders; amounts already paid; and sums to be retained for incomplete work, liquidated damages, and for any other cause under the Contract Documents. Any protest by the Contractor of the District Representative's estimate shall be as set forth in Section 21.04 and Article 23.

The Architect shall prepare a statement of final inspection, stating that the Work has been given a final inspection, that the Contractor has submitted the required documents (or which documents are missing), setting forth with detail any deviations in the Work as completed from the Contract Documents, and estimating the cost of correction of such deviations.

The Architect's statement shall be transmitted to the District along with the Contractor's application for final payment approved by the District Representative, Architect, and Project Inspector. The District Representative shall provide a copy of the Architect's statement of final inspection to the Contractor.

Section 21.04. Protest of the District Representative's Estimate; Claims.
If the Contractor contests the estimate of sums due prepared by the District Representative, the Contractor may file a claim in writing with the District Representative pursuant to the requirements of Article 23 and setting forth in detail all grounds alleged by the Contractor to justify an adjustment to the District Representative's estimate. The Contractor's claim shall be certified under penalty of perjury and in compliance with the California False Claims Act. Failure to include these required certifications will constitute grounds for immediate rejection of the claim.

Failure to file a timely claim shall constitute a waiver and acceptance by the Contractor of the District Representative's estimate, which shall then become final and be forwarded to the District for approval of payment.

Section 21.05. Completion; Acceptance of Contract; Notice of Completion.
The Contractor acknowledges and agrees that completion shall mean the Contractor's complete performance of all Work required by the Contract Documents, amendments, Change Orders, Construction Change Directives, and punch lists, and the District's formal acceptance of the Work, without regard to prior occupancy, substantial completion doctrine, beneficial occupancy, or otherwise.

Acceptance of the Work shall be made only by formal acceptance by the District. Recordation of a Notice of Completion shall be in the manner prescribed by law, provided that the Work shall then be fully and satisfactorily completed and the provisions of the Contract Documents fully and satisfactorily performed in all respects.

Section 21.06. Approval of Final Payment.
Following acceptance of the Work, the District shall authorize final payment to the Contractor of the undisputed sums found due, subject to retentions for stop notices as provided in Section 21.07 below. This final payment shall be made within sixty (60) days after completion, as defined in Section 21.05 above.

Section 21.07. Withholding for Stop Payment Notices.
The District will withhold from the Contractor any unpaid claims alleged in Stop Payment Notices filed pursuant to California Civil Code sections 9350 *et seq*. The District reserves all remedies it may have in the event of a Stop Payment Notice dispute. The basic standard to determine a sufficient withholding in the event of a Stop Payment Notice shall be one hundred fifty percent (150%) of the total of all Stop Payment Notices filed; provided, however, the District reserves the right to withhold different or greater sums in its discretion.

Section 21.08. Non-Waiver.
Neither acceptance of, nor payment for, the Work or any part thereof, nor any extension of time, nor any possession taken by District shall operate as a waiver of any of the provisions of this Contract, nor shall a waiver of any breach of this Contract be held to be a waiver of any other or subsequent breach. In addition, recordation of a Notice of Completion shall not be deemed an acceptance of latent defects, nor shall it constitute a waiver of any of the provisions of this Contract.

ARTICLE 22. GUARANTEES

Section 22.01. Guarantee Required.
In addition to any guarantees required elsewhere by the Contract Documents, the Contractor shall guarantee the Work for a minimum of two (2) years from and after the recordation of the Notice of Completion and completion of all contract obligations by the Contractor, including formal acceptance of the entire Project by the District. The Contractor specifically waives any right to claim or rely on the statutory definition of completion set forth in Civil Code section 9200. The Contractor specifically acknowledges and agrees that completion shall mean the Contractor's complete performance of all Work required by the Contract Documents, amendments, Change Orders, Directives, CCDs, and punch lists, and the District's formal acceptance of the entire Project, without regard to prior occupancy, substantial completion doctrine, beneficial occupancy, or otherwise. Such guarantee shall be made on the form provided.

The guarantee period for corrected defective work shall continue for a duration equivalent to the original guarantee period.

Such guarantee is in addition to, and not in lieu of, the District's rights to enforce this Contract in all respects.

ARTICLE 23. CLAIM REQUIREMENTS

Claims shall be subject to the requirements of Public Contract Code sections 20104 *et seq.* and 9204. A summary of those provisions is set forth below. A waiver of the rights granted by the referenced statutes is void and contrary to public policy, provided, however, that (1) 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; and (2) the District may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the statutory requirements, so long as the contractual provisions do not conflict with or otherwise impair the statutory timeframes and procedures. To the extent that the summary below is inconsistent with any requirement of those statutes, the statutes shall control. The terms below are intended to be consistent with the governing statutes, and any modifications shall be understood as lawful modifications or additions to the statutory requirements if at all possible.

Section 23.01. Notice of Potential Claim.
The Contractor shall promptly provide a written Notice of Potential Claim to the District upon discovery of concealed or unknown conditions or discovery of facts regarding any disagreement, protest, direction, situation, event, or occurrence that may result in a claim, including but not limited to changes in work and delays. The written Notice of Potential Claim shall set forth the reasons for which the Contractor believes adjustment to the Contract Price or Contract Time will or may be due, the nature of the costs and/or time involved, and, insofar as possible, the amount of the potential claim. The Notice shall be submitted as soon as practical, but no more than five (5) working days after the discovery of any facts or event that does or may give rise to the claim, unless a different period for notice is specified in the Contract Documents. **Failure to timely submit the Notice of Potential Claim constitutes acknowledgement that the condition(s), fact(s), occurrence(s) or event(s) did not cause any increase in cost or time to perform and waives any Claim that the Contractor otherwise may have had the right to submit based on such condition(s), fact(s), occurrence(s) or event(s).**

Section 23.02. Definitions.

"Claim" means a separate demand by Contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) payment by the public entity of money or damages arising from work done by, or on behalf of, Contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) payment of an amount that is disputed by the District.

"Mediation" means 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.

"Public works contract" or "public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

"Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with the Contractor or is a lower tier subcontractor.

Section 23.03. Claims Procedure.
All Claims under this Contract shall be resolved using the following procedure.

23.03.01 The Claim shall be in writing and include the documents necessary to substantiate the Claim. The evaluation of the Claim will be based on the District's records and the Claim documentation submitted by the Contractor, which shall include but not be limited to the

following: an explanation of the background; a chronology (including dates of all key events and date(s) that the Notice of Potential Claim was given); an explanation of the Contractor's position; supporting documentation of merit; analysis of delay for any claimed additional time, including CPM schedules; and a calculation of damages or additional amounts claimed, if any. Supporting documentation of merit may include, but not be limited to, Construction Documents, correspondence, conference or meeting notes, shop drawing logs, survey books, inspection reports, delivery schedules, test reports, daily reports, subcontracts, CPM schedules, photos, RFIs, Directives, and other such records. Supporting documentation of damages may include, but not be limited to, certified payroll reports; purchase orders; invoices; project as-planned and as-built costs; Subcontractor payment releases; quantity reports; other related records; general ledger and any other accounting materials.

Claims must be filed on or before the date of final payment, <u>except that</u> the Claim must be submitted no later than thirty (30) days from the date of the District Representative's estimate of sums due. Any Claim shall be certified under penalty of perjury and in compliance with the California False Claims Act, as set forth in Section 23.04 below. Failure to include these required certifications will constitute grounds for immediate rejection of the Claim and shall be deemed a waiver and absolute bar of the Claim, including any right to pursue the Claim further.

23.03.02 If a Subcontractor, including a lower tier Subcontractor, lacks legal standing to assert a Claim against the District because privity of contract does not exist, then the Contractor may present a Claim on behalf of such a Subcontractor. A first-tier Subcontractor may request in writing, either on its own behalf or on behalf of a lower tier Subcontractor, that the Contractor present a Claim on behalf of the Subcontractor for work that was performed by the Subcontractor. The Subcontractor requesting that the claim be presented 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 and, if the Contractor did not present the Claim, provide the Subcontractor with a statement of the reasons for not having done so.

23.03.03 Upon receipt of a Claim, the District shall conduct a reasonable review of the Claim. Within 30 days of receipt of the Claim, the District may request, in writing, any additional documentation supporting the Claim or relating to defenses to the Claim that the District may have against the Contractor. Where additional information is requested by the District, the time in which the District must respond to a Claim shall be tolled until all requested information is provided. If additional information is thereafter required, then it shall be requested and provided upon mutual agreement of the District and the Contractor.

23.03.04 Within 45 days of receipt of the Claim, as that time may be tolled as provided in Section 23.03.03 above, the District shall provide the Contractor with a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and the Contractor may, by mutual agreement, extend the time period for a response. Failure by the District to respond to a Claim within the time periods described herein shall result in the Claim being deemed rejected in its entirety. A Claim that is denied by failure of the District to respond shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of the Contractor.

23.03.05 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. The District shall not fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the Contract.

23.03.06 If the Contractor disputes the District's written response, or the District fails to respond within the time prescribed, the Contractor may so notify the District, in writing, either within 15 days of receipt of the District's response or within 15 days of the District's failure to

respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand, 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 dispute.

23.03.07 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, then 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. Failure by the District to provide the written statement within the time periods described herein shall result in the remaining Claim issues being deemed rejected in their entirety. Denial by failure of the District to respond shall not constitute an adverse finding with regard to the merits of the remaining Claim issues or the responsibility or qualifications of the claimant. 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.

23.03.08 Any remaining disputed portion of the Claim following the meet and confer conference 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. Unless otherwise agreed to by the District and the Contractor in writing, the mediation conducted pursuant to this Section shall excuse any further obligation under Public Contract Code Section 20104.4 to mediate after litigation has been commenced. This Section does not preclude arbitration if mediation under this Section does not resolve the parties' dispute.

23.03.09 If mediation is unsuccessful, then the Contractor may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code with respect to the parts of the Claim remaining in dispute. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written Claim pursuant to Section 23.03.01 until the time that mediation of disputed portions of that Claim is completed. This Section does not apply to tort claims, and nothing in this Section is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

23.03.10 Amounts not paid in a timely manner as required by this Section shall bear interest at seven percent (7%) per year.

23.03.11 Claims of $375,000 or less are subject to the following procedures for civil actions filed to resolve the claims:

(a) The case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act (Title 4 (commencing with Section 2016.010) of Part 4 of the Code of Civil Procedure) shall apply to any such proceeding, consistent with the rules pertaining to judicial arbitration.

(b) The parties stipulate that the arbitrator shall be experienced in construction law and shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties,

except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

(c) In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who, after receiving an arbitration award, requests a trial *de novo* but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorneys' fees of the other party arising out of trial *de novo.*

(d) The court may, upon request by any party, order any witnesses to participate in arbitration process.

In any suit filed under Public Contract Code Section 20104.4, the District shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

Section 23.04. Claim Certification.
Contractor acknowledges that it has read and is familiar with the provisions of the False Claims Act (California Government Code sections 12650 *et seq*.). Submission by Contractor of any claim (as the term "claim" is defined in False Claims Act) to the District in connection with the Project, whether on its behalf or on behalf of a Subcontractor or material supplier, shall constitute a representation by Contractor to the District that submission of the claim does not in any respect, violate the False Claims Act. Any party with an interest in the claim, including Contractor and any Subcontractor or material supplier, shall certify under penalty of perjury the validity and accuracy of any claim submitted to the District, as provided below. Compliance with this claims certification requirement shall be a condition precedent to any obligation District might otherwise have to review the claim, and failure to provide such certification shall constitute a waiver of the claim.

The claim certification required by this section shall provide as follows:

CLAIM CERTIFICATION

Under penalty of perjury, and with specific reference to the California False Claims Act, Government Code sections 12650 *et seq*. I certify that submission of the attached claim is made in good faith; that the supporting data prepared by the undersigned company are accurate and complete to the best of my knowledge and belief; that submission of the claim to the District does not violate the False Claims Act; and that I am duly authorized to certify the claim on behalf of the claimant.
Dated: _____

Company_____

Signature _____

Title_____

Section 23.05. Continuance of Work.
In the event of a dispute between the parties as to performance of the Work or the interpretation of the Construction Documents, or payment or nonpayment for Work performed or not performed, the parties shall attempt to resolve the dispute. Pending resolution of this dispute, the Contractor agrees to continue the Work diligently to completion. If the dispute is not resolved, except as provided otherwise in the Contract, the Contractor agrees it will neither rescind the Contract, nor stop the progress of the Work on the Project.

ARTICLE 24. ADDITIONAL PROVISIONS

Section 24.01. Conflict of Interest.
No official of the District who is authorized on behalf of the District to negotiate, make, accept, or approve, any architectural, engineering, inspection, construction, or materials supply contract, or any subcontract in connection with the construction of the Project, or any land acquisition in connection with the Project, shall become directly or indirectly interested personally in this contract or in any part thereof.

No officer, employee, architect, attorney, engineer, or inspector of or for the District who is authorized on behalf of the District to exercise any executive, supervisory, or other similar function in connection with the construction of the Project shall become directly or indirectly interested personally in this contract or any part thereof.

Section 24.02. No Agreements.
No oral agreement or conversation with any officer, agent, or employee of the District, either before, during, or after the execution of the Contract Documents shall affect or modify any term or condition contained in the Contract Documents, nor shall such oral agreement or conversation entitle the Contractor to any additional payment or time to perform whatsoever under the terms of the Contract.

Section 24.03. Anti-Trust Assignment.
By execution of the Contract Documents, or any subcontract awarded by the Contractor, the Contractor or any Subcontractor offers and agrees to assign and hereby does assign to the District all rights, title, and interest in and to all causes of action the Contractor or Subcontractor may have under Section 4 of the Clayton Act (15 USC Section 15) or under the Cartwright Act (Chapter 2 of Part 2 of Division 7 of the Business and Professions Code, commencing with Section 16700), arising from purchases of goods, services, or materials pursuant to this public works contract or subcontract. This assignment shall be made and shall become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the parties.

Section 24.04. Contractor Not Agent, Nor Employee.
Neither the Contractor nor any subcontractor, or any officer, agent, or employee of either, is, nor shall they represent themselves to be, an officer, agent, or employee of the District for any purpose whatsoever.

No person employed by the Contractor, or by any subcontractors, are, nor shall they be construed to be in any manner or for any purpose whatsoever, employees of the District.

Section 24.05. Access to Records.
The District or the District's authorized representative shall have access, upon reasonable notice, during normal business hours, to any books, documents, accounting records, papers, project correspondence, project files, scheduling information, and other relevant records of the Contractor and all subcontractors directly or indirectly pertinent to the Work, original as well as change and claimed extra work, to verify and evaluate the accuracy of cost and pricing data submitted with any change order prospective or executed, or any claim for which additional compensation has been requested.

Such books, documents and other records mentioned above shall include, but are not limited to all those reasonably necessary in the opinion of the District to determine the accurate amount of direct and indirect costs, job site, area and home office overhead, delay and impact costs, however characterized, and shall include the original bid and all documents related to the bid and its preparation, as well as the as-planned Contract Schedule and all related documents.

Such access shall include the right to examine and audit such records, and make excerpts, transcriptions, photocopies and/or electronic copies at the District's cost.

END OF SECTION

Section 00 73 00 - SPECIAL PROVISIONS

ARTICLE 1: SCOPE OF WORK

Scope of Work includes but is not limited to: Relocate two (2) portables from Genevieve Didion to Abraham Lincoln; During the Disconnect of the portables at Didion Site, please pull the fiber back and coil it in the closest pull box. All Low Voltage and power to be disconnected, pulled and coiled in a pull box 5'-0" away from the building footprint. All the remaining utilities need to be also disconnected and capped in a new utility box 5'-0" away from the existing building footprint for ease of connection for the next phase on that site. The Existing ramp at the Didion needs to be demolished and not moved to the new site. All internal components for the IDF cabinet are to be moved with the building to the new site. When the two classrooms are moved to Abraham Lincoln Site they may have to be stored on cribs until the building pad is ready. The building pad is a depressed slab and wood foundations. The building comes with the IDF cabinet with all the components for these two classrooms. Reconnect all the low voltage systems such as, data, intercom, intrusion, Fire alarm and connect to existing campus systems and make them operational. Provide new power to these classrooms as shown in the drawings and connect to the closest panel. Connect water and sewer connections on site as needed. We have some fencing modifications with mow curbs as shown in the drawings. Provide venting for depressed foundation area so that the floor finish is flush with new concrete walks as shown in the drawings. Both the new classroom buildings will be painted to match campus colors. All roof downspouts to be connected to underground storm drainage system. Install concrete aprons as shown in the drawings. Replace all damaged classroom ceiling tiles as needs. Both buildings to be completely operational on completion.

Included:

1. Disconnect and reconnect all utilities (data and fire alarm) at Genevieve Didion to Abraham Lincoln
2. Portables for Fern Bacon to Genevieve Didion will be disconnected by other vendor. Reconnect all utilities at Genevieve Didion.
3. Portables for Fern Bacon to Capital City will be disconnected by other vendor; no reconnecting needed. Portables will be on placed on stilts and parking lot.
4. Furnish and install all labor, material and equipment for <u>all Work shown and/or specified</u> in accordance with the Contract Documents, except as excluded below.
5. This Scope of Work also applies to all applicable awarded alternates.
6. Information provided under "Also Included" points out some items which may be considered less obvious or "unconventional," but which are included in the Scope of Work.
7. This Bid Package Description is intended to clarify scope to the Contractor, but is in no way intended to limit scope that is reasonable inferable as being required by the Work included in this description. Work required may be shown or specified anywhere in the Contract Documents.

Also included but not limited to as applicable and/or directed:

1. Trenching/compaction and backfill Work.
2. Concrete/asphalt patching Work.
3. All demolition and removal and/or replacement of Work associated with this Bid Package.
4. Coordination with other Contractors working on this campus.
5. Perform an electronic underground existing utility survey by a qualified underground utility locator service company in all areas where trenching operations will be performed. An as-built record drawing (one hard copy and one copy on electronic media prepared in AutoCAD is required to be submitted at the conclusion of the underground scope of Work.
6. Weather protection during the course of construction (See Section 00 72 00, General Conditions).
7. Temporary barricades, signs, pedestrian protection, temporary facilities and traffic control Work.
8. All access panels including backing and blocking, associated with this Bid Package.
9. Daily and final clean-up is required.
10. Qualified/certified technicians must perform the replacement and/or repair of all landscape, irrigation, asphalt/concrete surfaces and above or below grade utilities disturbed during construction, and the District must be given the opportunity to test and accept the Work prior to covering up.
11. Patching, repairing, painting and/or replacement of all finished surfaces disturbed during construction.

12. Protection of new and existing roofing from damage.
13. Final testing of all systems installed prior to final acceptance.
14. Qualified/certified C-7 licensed technicians must perform the replacement and/or repair of existing low voltage systems disturbed during construction, and the District must be given the opportunity to test and accept the Work prior to covering up.
15. Provide temporary means of operation for existing storm, water, sewer, gas, mechanical, electrical, and low voltage systems during construction.
16. Painting of all new (N) and existing (E) exposed interior and exterior piping, ductwork and raceway systems (other than rooftop piping and raceway systems), and all roofing demolition, repair, replacement, roof patching, sheet metal flashing.
17. A full-time superintendent shall be provided for the project. See Section 00 72 00, General Conditions.
18. The use of the District's proprietary communication / documentation software will be required.

19. Any campus utility interruptions require a minimum of a 48-hour notice to the District Representative for coordination purposes.
20. Contractor shall provide a $2,000,000 excess/umbrella policy (refer to Section 00 72 00, Section 3.14.A.3).

Excluded:

1. Permits.
2. Fees.

Included Bid Alternates

The following Bid Alternates are included within the Scope of Work:

No Bid Alternates

ARTICLE 2: SCHEDULE

Section 2.01 Contract Time/Schedule Constraints

All Work shall be complete within **70 calendar days** of the commencement date stated in the Notice to Proceed.

The Contractor is required to submit a Contract Schedule for the activities within its scope of Work according to the requirements specified in General Conditions Section 00 72 00, Article 13, Time of Work, which shall include the following requirements or milestones:

Submittals complete:	35 days following NTP
Substantial completion	***No later than*** 30 prior to final completion
Punch list completion	***No later than*** **date of final completion**
Close-out documents submitted	***No later than*** **date of final completion**

The Contract Schedule shall include ___ days for weather delays. The Contractor shall not be entitled to an extension of time for weather delays unless the number of days of weather delay exceeds the number of days required in the Schedule for weather delays.

The District will occupy the Site during the entire period of construction for the conduct of normal operations. The Contractor shall cooperate with the District to minimize conflict, and to facilitate the District's operations.

Section 2.02 Liquidated Damages

In the event of failure on the part of the Contractor to substantially complete the Work, or any portion thereof identified by Milestones, or to complete the overall Project within the Contract Time, including any approved extensions thereof, the Contractor shall pay District liquidated damages for each calendar day of delay until completion of the milestone or the Project. The liquidated damages for substantial completion of each Milestone (if stated) and for the Project are separate, and may be accumulated if substantial completion of more than one Milestone is delayed concurrently.

The amount of liquidated damages is indicated below:

Substantial completion of the Project	**$2,500/calendar day**
Final completion of the Project	**$100/calendar day**

ARTICLE 3: ALLOWANCES

Section 3.01 Allowance Amounts.

The Contract Documents include the following allowances for the specified purposes:

DSA Allowance	**$250,000**
Total Allowance	**$250,000 of Bid**

Section 3.02 Application of Allowances.
Allowances shall be used efficiently and expeditiously to minimize cost and delay to the Project. Prior to commencing any work that would result in the utilization of an Allowance, Contractor shall give the District written notice of its request to use such funds, and the specific Allowance to be used if more than one Allowance is included in the Contract. Contractor shall specify whether it proposes to perform the Allowance work for a lump sum or at force account. The District shall respond to Contractor's requested use of Allowance funds within five (5) business days of receipt of the request. The District's response shall either a) approve of the use of the Allowance, b) approve the use of the Allowance but propose a different amount, c) deny the use of the Allowance and specify the reason, or d) request further information to evaluate the requested use of the Allowance. If the Contractor commences the work without giving the District the required written notice, the Contractor shall, for all purposes, be deemed to have waived its rights to additional compensation for such work.

Section 3.03 Documenting Use of Allowances.
The Contractor's monthly pay application shall include Allowance amounts used and remaining. If the Allowance is approved by force account, the Contractor shall separately track all labor, materials, and equipment used for the Work to be covered by the Allowance and shall submit such documentation to the District Representative at the end of each working day for review and approval.

ARTICLE 4: ADDITIONAL INSURANCE

Section 4.01 Insurance Requirements.

The limits of Insurance required by Section 00 72 00 – General Conditions, Article 3, are modified as follows:

No Modifications

1

EXHIBIT A – School Year Calendar

Sacramento City Unified School District

Human Resource Services

Traditional Student Attendance Calendar

2026-27 School Year

JULY							
S	M	T	W	T	F	S	
			1	2	3	4	0
5	6	7	8	9	10	11	0
12	13	14	15	16	17	18	0
19	20	21	22	23	24	25	0
26	27	28	29	30	31		0
						Days:	0

AUGUST							
S	M	T	W	T	F	S	
						1	0
2	3	4	5	6	7	8	0
9	10	11*	12	13	14	15	4
16	17	18	19	20	21	22	5
23	24	25	26	27	28	29	5
30	31						1
						Days:	15

SEPTEMBER							
S	M	T	W	T	F	S	
		1	2	3	4	5	4
6	7	8	9	10	11	12	4
13	14	15	16	17	18	19	5
20	21	22	23	24	25	26	5
27	28	29	30				3
						Days:	21

OCTOBER							
S	M	T	W	T	F	S	
				1	2	3	2
4	5	6	7	8	9	10	5
11	12	13	14	15	16	17	4
18	19	20	21	22	23	24	5
25	26	27	28	29	30	31	5
						Days:	21

NOVEMBER							
S	M	T	W	T	F	S	
1	2	3	4	5	6	7	5
8	9	10	11	12	13	14	4
15	16	17	18	19	20	21	5
22	23	24	25	26	27	28	0
29	30						1
						Days:	15

DECEMBER							
S	M	T	W	T	F	S	
		1	2	3	4	5	4
6	7	8	9	10	11	12	5
13	14	15	16	17	18	19	5
20	21	22	23	24	25	26	0
27	28	29	30	31			0
						Days:	14

JANUARY							
S	M	T	W	T	F	S	
					1	2	0
3	4	5	6	7	8	9	4
10	11	12	13	14	15	16	5
17	18	19	20	21	22	23	4
24	25	26	27	28	29	30	5
31							0
						Days:	18

FEBRUARY							
S	M	T	W	T	F	S	
	1	2	3	4	5	6	5
7	8	9	10	11	12	13	4
14	15	16	17	18	19	20	4
21	22	23	24	25	26	27	5
28							0
						Days:	18

MARCH							
S	M	T	W	T	F	S	
	1	2	3	4	5	6	5
7	8	9	10	11	12	13	5
14	15	16	17	18	19	20	5
21	22	23	24	25	26	27	0
28	29	30	31				2
						Days:	17

APRIL							
S	M	T	W	T	F	S	
				1	2	3	2
4	5	6	7	8	9	10	5
11	12	13	14	15	16	17	5
18	19	20	21	22	23	24	5
25	26	27	28	29	30		5
							0
						Days:	22

MAY							
S	M	T	W	T	F	S	
						1	0
2	3	4	5	6	7	8	5
9	10	11	12	13	14	15	5
16	17	18	19	20	21	22	5
23	24	25	26	27*	28	29	4
30	31						0
						Days:	19

JUNE							
S	M	T	W	T	F	S	
		1	2	3	4	5	0
6	7	8	8	10	11	12	0
13	14	15	16	17	18	19	0
20	21	22	23	24	25	26	0
27	28	29	30				0
						Days:	0

Legend/Key	
*	First/Last Day of School
	Non-School Days
	School Semester Start/End

# of School Days (Students)
180

EXHIBIT B – Index of Drawings / Scope of Work Exhibits

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PRINTED ON THIS SHEET'S ORIGINAL PAGE SIZE

SACRAMENTO CITY UNIFIED SCHOOL DISTRICT

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

Sacramento City Unified School District

HMC Architects
DESIGN FOR GOOD
3186-077-000
2101 CAPITOL AVENUE, SUITE 100, SACRAMENTO, CA, 95816
916 368 7990 / www.hmcarchitects.com
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NOT FOR CONSTRUCTION

PROJECT TEAM

OWNER
SCUSD
5735 47TH AVENUE SACRAMENTO, CA 95824
916-643-7400

ARCHITECT
HMC ARCHITECTS
2101 CAPITOL AVENUE, SUITE 100 SACRAMENTO, CA 95816
916-368-7990

CIVIL
WCE
1117 WINFIELD WAY, SUITE 110 EL DORADO HILLS, CA 95762
916-985-1877

MEP DATA & FIRE ALARM
IMEG
1677 EUREKA ROAD, SUITE 102 ROSEVILLE, CA 95661
916-780-2030

FACILITY:
ABRAHAM LINCOLN ELEMENTARY
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
COVER SHEET

DD SET

DATE: xxxx.xx.xx
CLIENT PROJ NO:
SHEET:

G0.10

Autodesk Docs://3186077000 SCUSD Abraham Lincoln TK Classroom Add R24/3186077000-A-LNCLN-TK-NC 1-SITE.rvt
4/24/2026 10:05:12 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON ANSI D SIZED PLANS

GENERAL NOTES

1. CONSTRUCTION DOCUMENTS DESCRIBE THE PRODUCTS, SYSTEMS, QUANTITIES, CONFIGURATION, AND PERFORMANCE SPECIFICATIONS THAT DELIVER THE OVERALL DESIGN INTENT OF THE PROJECT.
2. THE CONSTRUCTION DOCUMENT DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY BOTH.
3. PERFORMANCE BY THE CONSTRUCTION TEAM SHALL BE CONSISTENT WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AS NECESSARY TO DELIVER THE INDICATED RESULTS OF THE DESIGN INTENT.
4. VERIFY ALL DIMENSIONS, LOCATIONS OF EXISTING UTILITIES, AND CONDITIONS ON THE JOB SITE PRIOR TO THE START OF WORK OR PORTIONS OF THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE CONSTRUCTION DOCUMENTS. EXISTING CONDITIONS ARE INDICATED AS A RESULT OF FIELD OBSERVATIONS. INFORMATION SHOWN ON AVAILABLE DOCUMENTS AND FIELD CONDITIONS AT THE TIME OF PREPARATION.
5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES, ORDINANCES, REGULATIONS AND LAWS.
6. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND SCAFFOLDING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN.
8. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
9. DETAILS MARKED 'TYPICAL' SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY NOTED OTHERWISE.
10. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMAIN FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION.
11. PRIOR TO THE START OF WORK THE CONTRACTOR SHALL COORDINATE BETWEEN THE REQUIREMENTS OF ALL DISCIPLINES HEREIN AND BETWEEN THE REQUIREMENTS OF ALL DRAWINGS AND SPECIFICATIONS IN ORDER THAT ALL ITEMS SATISFACTORILY RELATE TO ONE ANOTHER. NOTIFY ARCHITECT IMMEDIATELY REGARDING ANY ITEMS THAT CANNOT BE COORDINATED.
12. CONTRACTOR SHALL EXCERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING, CONDUIT, ETC. AND TO PREVENT HAZARD TO PERSONNEL AND/OR TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
13. CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE EXISTING OR NEW STRUCTURAL ELEMENTS SHALL NOT TO BE STARTED UNTIL THE DETAILS HAVE BEEN REVIEWED AND APPROVED BY THE ARCHITECT, AND STRUCTURAL ENGINEER OF RECORD.
14. ALL WORK SHALL CONFORM TO 2025 EDITION TITLE 24, CALIFORNIA CODE OF REGULATION (CCR)
15. THE LIMIT OF WORK LINE SHOWS THESE DRAWINGS IS AN APPROXIMATE LIMIT OF WORK ONLY. REFER TO CONSULTANT DRAWINGS FOR ADDITIONAL WORK, INCLUDING BUT NOT LIMITED TO INSTALLATION OF CONDUIT, MANHOLES, PULLBOXES, ETC WHICH ARE TO BE PART OF THIS WORK, ALTHOUGH OCCURING OUTSIDE OF SHOWN LIMIT OF WORK LINES.
16. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
17. ALL CONSTRUCTION AND DEMOLITION SHALL BE IN ACCORDANCE WITH CHAPTER 33 OF THE CBC AND CFC, AND THE WRITTEN SITE SAFETY PLAN.
18. CONTRACTOR IS TO REVIEW AND COMPLY WITH ALL REQUIREMENTS AND MITIGATION MEASURES SET FORTH.
19. NO DUMPING OR PLACING OF ANY DIRT OR DEBRIS SHALL BE ALLOWED OUTSIDE OF THE CONTRACTORS LIMIT OF WORK AREA.
20. TO THE FULLEST EXTENT PERMITTED BY LAW, THE GENERAL CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS THE OWNER, THE ARCHITECT AND THE ARCHITECT'S CONSULTANTS, AGAINST ANY CLAIMS RELATED TO HAZARDOUS MATERIALS CAUSED, IN WHOLE OR IN PART, BY THE GENERAL CONTRACTOR OR ITS SUBCONTRACTORS. FURTHER, THE GENERAL CONTRACTOR AND ITS SUBCONTRACTORS SHALL OBTAIN CONTRACTUAL LIABILITY COVERAGE FOR THIS INDEMNIFICATION OBLIGATION AND SHALL NAME THE OWNER, THE ARCHITECT AND THE ARCHITECT'S CONSULTANTS AS ADDITIONAL INSUREDS UNDER ANY INSURANCE POLICIES PROVIDING SUCH CONTRACTUAL LIABILITY COVERAGE.
21. FABRICATION AND INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT BE STARTED UNTIL CONTRACTOR'S DRAWINGS, SPECIFICATIONS, AND ENGINEERING CALCULATIONS FOR THE ACTUAL SYSTEMS TO BE INSTALLED HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT OR STRUCTURAL ENGINEER AND APPROVED BY THE DSA. LIST DEFERRED SUBMITTAL ITEMS FOR THIS PROJECT.
22. CHANGE TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY DSA, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24 CCR.
23. A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY DSA SHALL PROVIDE CONTINUOUS INSPECTION OF WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR. INSPECTOR TO BE CLASS 3.
24. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT. THE REPORTS SHALL BE SUBMITTED TO ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, OWNER, INSPECTOR OF RECORD, AND THE DSA FIELD ENGINEER. THE REPORTS OF ANY FAILURES OF TESTS AND INSPECTIONS ARE TO BE SUBMITTED TO DSA DISTRICT STRUCTURAL ENGINEER.
25. 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 DSA APPROVED 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)

ACCEPTANCE TESTING REQUIREMENTS

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH ENERGY CODE.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.

A LISTING OF CERTIFIED ATTs CAN BE FOUND AT: HTTPS://WWW ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN- CERTIFICATION-PROVIDER-PROGAM/ACCEPTANCE

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED. AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTUCTION/ INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL BE COLLECTING THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

CODES

PARTIAL LIST OF APPLICABLE CODES

ALL WORK PERTAINING TO AND ALL MATERIALS SUPPLIED FOR EXECUTING AND COMPLETING THIS CONTRACT SHALL COMPLY WITH PROVISIONS SPECIFIED IN THE CONTRACT DOCUMENTS AND WITH ALL APPLICABLE LAWS, REGULATIONS AND ORDINANCES GOVERNING WORK INCLUDING, BUT NOT NECESSARILY LIMITED TO, THOSE OF:

2025 CALIFORNIA BUILDING STANDARDS, ADMINISTRATIVE CODE (CAC) PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2025 CALIFORNIA BUILDING CODE (CBC) PART 2, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), VOL. 1&2 BASED ON THE 2024 INTERNATIONAL BUILDING CODE
2025 CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR) BASED ON THE 2023 NATIONAL ELECTRICAL CODE (NEC)
2025 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 CALIFORNIA CODE OF REGULATIONS (CCR) BASED ON THE 2024 UNIFORM MECHANICAL CODE (UMC)
2025 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR) BASED ON THE 2024 UNIFORM PLUMBING CODE (UPC)
2025 CALIFORNIA ENERGY CODE (CEC) PART 6, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2025 CALIFORNIA HISTORICAL BUILDING CODE (CHBC) PART 8, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2025 CALIFORNIA FIRE CODE (CFC) PART 9, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR) BASED ON THE 2024 INTERNATIONAL FIRE CODE (IFC)
2025 CALIFORNIA EXISTING BUILDING CODE (CEBC) PART 10, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR) BASED ON THE 2024 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2025 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN) PART 11, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2025 CALIFORNIA REFERENCED STANDARDS CODE (CRSC) PART12,TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2024 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 101 LIFE SAFETY CODE
2024 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 99 HEALTH CARE FACILITIES CODE

TITLE 19 CCR, PUBLIC SAFETY STATE FIRE MARSHALL REGULATIONS

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2025 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.

PARTIAL LIST OF APPLICABLE STANDARDS

FOR A LIST OF APPLICABLE STANDARDS, INCLUDING CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS, REFER TO CBC CHAPTER 35 AND CFC CHAPTER 80.

STATEMENT OF GENERAL CONFORMANCE

( ) THE DRAWINGS OR SHEETS LISTED ON THE INDEX SHEET WITH AN (*)
( ) 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))

ALL DRAWINGS OR SHEETS LISTED ON THE SHEET INDEX WITH AN (*) IS/ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN AND HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS.

SIGNATURE — DATE
ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE

PRINT NAME

X-00000 — 01-01-22
LICENSE NUMBER — EXPIRATION DATE

PROJECT DESCRIPTION

GENERAL DESCRIPTION OF WORK

RELOCATE (2) PORTABLES FROM GENEVIEVE F. DIDION K-8 SCHOOL, WITH ENTRANCES AT GRADE (NO RAMPS), WITH ASSOCIATED SITE WORK, INCLUDING GRADING, PAVING, STORM DRAINAGE, ELECTRICAL, TELECOM, FIRE ALARM, ETC. (E) FENCE TO BE RELOCATED AROUND THE PERIMETER OF THE PORTABLES.

PROJECT DATA

PROJECT ADDRESS

3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT INFORMATION

BUILDING NAME: D1 & D2

YEAR BUILT: 1999

TYPE OF CONSTRUCTION: VB

OCCUPANCY: E

AUTOMATIC FIRE SPRINKLER SYSTEM: NON-SPRINKLERED

NUMBER OF STORIES: 1

BUILDING AREA: 940 SF BUILDING
165 SF OF OVERHANGS
(TYPICAL OF 2 BUILDINGS)
2210 SF TOTAL

(FOR ADDITIONAL INFORMATION, SEE CODE INFORMATION SITE PLAN)

SITE SPECIFIC DESIGN CRITERIA

BASIS OF STRUCTURAL DESIGN

2025 CALIFORNIA BUILDING CODE - CBC
2022 ASCE 7
RISK CATEGORY II
DSA - SS AMENDMENTS

WIND LOADS - RISK CATEGORY

94 MPH (ULT), XX MPH (ASD)
EXPOSURE C
TOPOGRAPHIC FACTOR - K_{ZT} X.XX
INTERNAL PRESSURE - GC_{Pi} X.XX
q (0'-15') ASD **X.X PSF**

SEISMIC LOADS - RISK CATEGORY II

SOIL SITE CLASS DEFAULT
SEISMIC DESIGN CATEGORY D

S_S	0.55	S_1	0.21
S_{MS}	0.85	S_{M1}	0.57
S_{DS}	0.57	S_{D1}	0.38

DEFERRED APPROVAL

NONE

BUILDING VITALS & AIA 2030 COMMITMENT REPORTING

OVERVIEW
CONDITIONED AREA (sqft): **[AREA]**
UNCONDITIONED AREA (sqft): **[AREA]**

ENERGY
ENERGY MODELING TOOL: **[SOFTWARE]**
DESIGN ENERGY CODE: **[CODE REFERENCE]**
ENERGY START TARGET FINDER EUI (kBtu/sf/yr): **[EUI]**
PROJECT TEAM BASELINE EUI (kBtu/sf/yr): **[EUI]**
PROJECT TEAM GOAL EUI (kBtu/sf/yr): **[EUI]**
PROJECT TEAM PREDICTED EUI @ SD (kBtu/sf/yr): **[EUI]**
PROJECT TEAM PREDICTED EUI @ DD (kBtu/sf/yr): **[EUI]**
PROJECT TEAM PREDICTED EUI @ CD (kBtu/sf/yr): **[EUI]**
LIGHTING POWER DENSITY (watts/sf): **[LPD]**
WINDOW TO WALL RATIO: **[WWR]**
ASHRAE 90.1 APPENDIX G - BASELINE ENGERY MODEL (kBtu/sf/yr): **[EUI]**

WATER
REDUCTION IN POTABLE WATER PER LEED 2009 P1: **[%]**

ATMOSPHERE
CO2 OFFSET: **[TONS]**

SHEET INDEX

NUMBER	NAME
GENERAL SHEET	
G0.10	COVER SHEET
G0.11	PROJECT DATA SHEET
G0.12	RESPONSIBILITY MATRIX
3	
PROJECT ANALYSIS	
G1.11	CODE INFORMATION SITE PLAN
G1.31	EXITING ANALYSIS
G1.51	LOCAL FIRE AUTHORITY SITE ACCESS PLAN
3	
CIVIL	
C0.1	CIVIL GENERAL NOTES AND ABBREVIATIONS
C0.2	TOPOGRAPHIC SURVEY
C1.1	DEMOLITION PLAN
C2.1	GRADING AND PAVING PLAN
C3.1	UTILITY PLAN
C4.1	FENCING PLAN
C5.1	DETAILS AND SECTIONS
C5.2	DETAILS AND SECTIONS
8	
ARCHITECTURE	
A1.01	SITE DEMOLITION PLAN - GENEVIEVE DIDION
A2.11	FLOOR PLANS & RCPS
A5.11	EXTERIOR ELEVATIONS
A8.11	INTERIOR ELEVATIONS
A10.81	TYPICAL DETAILS
5	
PLUMBING	
P0.00	PLUMBING COVERSHEET
P1.00	SITE DEMOLITION PLAN - GENEVIEVE DIDION - PLUMBING
P2.00	SITE PLAN - PLUMBING NEW CONSTRUCTION
3	
ELECTRICAL	
E0.00	ELECTRICAL COVERSHEET
E0.01	ELECTRICAL COVERSHEET
E1.00	SITE DEMOLITION PLAN - GENEVIEVE DIDION - ELECTRICAL
E2.00	SITE PLAN - ELECTRICAL NEW CONSTRUCTION
E2.01	SITE PLAN - EGRESS PHOTOMETRIC
E2.10	FLOOR PLAN - ELECTRICAL NEW CONSTRUCTION
E4.00	ELECTRICAL DETAILS
E500	ELECTRICAL DIAGRAMS
E700	ELECTRICAL PANEL SCHEDULES
9	
FIRE ALARM	
FA0.00	FIRE ALARM COVERSHEET
FA1.00	SITE DEMOLITION PLAN - GENEVIEVE DIDION - FIRE ALARM
FA1.10	FLOOR DEMOLITION PLAN - FIRE ALARM
FA2.00	SITE PLAN - FIRE ALARM NEW CONSTRUCTION
FA2.10	FLOOR PLAN - FIRE ALARM NEW CONSTRUCTION
FA4.00	FIRE ALARM DETAILS
FA5.00	FIRE ALARM DIAGRAMS
7	

NUMBER	NAME
PC DOCUMENTS	
A	INDEX AND TEST & INSPECTION SHEET
A1	GENERAL NOTES
A1.2	24'X40' EXTERIOR ELEVATIONS
A2.2	24'X40' FLOOR AND REFLECTED CEILING PLANS
A3	STANDARD DETAILS
A4	GENTIONAL SPECIFICATIONS
P1	STANDARD PLUMBING SPECIFICATIONS AND DETAILS
S0.1	GENERAL NOTES AND TYPICAL DETAILS
S0.2	TYPICAL DETAILS
S2.1W	WOOD PAD FOUNDATION PLANS
S2.2M	MULTI-WIDE FLOOR AND ROOF FRAMING PLANS
S3.1MA	MULTI-WIDE SHEARWALL ELEVATIONS (24',36', & 48'X40')
S5.1W	WOOD PAD FOUNDATION DETAILS
S8.1	FRAMING DETAILS
S8.2	FRAMING DETAILS
15	
Grand total: 53	

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

Sacramento City Unified School District

HMC Architects — DESIGN FOR GOOD
3186-077-000
2101 CAPITOL AVENUE, SUITE 100, SACRAMENTO, CA. 95816
916.368.7990 / www.hmcarchitects.com © 2025 HMC GROUP

NOT FOR CONSTRUCTION

ISSUE

Δ	DESCRIPTION	DATE

SYMBOL LEGEND

NORTH ARROW
TICK INDICATES PLAN NORTH
ARROW INDICATES TRUE NORTH

ELEVATION CALLOUT (TYPICAL FOR EXTERIOR)
LOCATION ON SHEET
SHEET WHERE ELEVATION IS DRAWN

ELEVATION CALLOUT (TYPICAL FOR INTERIOR)
LOCATION ON SHEET
SHEET WHERE ELEVATION IS DRAWN

ELEVATION CALLOUT - ALT. (FOR EXTERIOR AND INTERIOR)
LOCATION & SHEET WHERE ELEVATION IS DRAWN

SECTION CALLOUT
INDICATES A SIMILAR CONDITION
LOCATION ON SHEET
SHEET WHERE SECTION IS DRAWN

DETAIL CALLOUT
INDICATES A SIMILAR CONDITION
LOCATION ON SHEET
SHEET WHERE SECTION IS DRAWN

CONTROL OR DATUM POINT
NAME OF ELEVATION (IF APPLICABLE)
ELEVATION ABOVE FINISHED FLOOR

GRID BUBBLE
EXISTING BUILDING GRID SYMBOL
GRID NUMBER
NEW BUILDING GRID SYMBOL

DOOR CALLOUT
DOOR NUMBER

INTERIOR FINISH CALLOUT
MATERIAL FINISH TYPE (SEE FINISH SCHEDULE)

WINDOW CALLOUT
WINDOW NUMBER (SEE WINDOW SCHEDULE)

WALL TYPE CALLOUT
WALL TYPE MARK - SEE A10.11
WALL STC RATING
WALL FIRE RATING TYPE

MATCHLINE REFERENCE
LOCATION ON SHEET
SHEET WHERE PLAN IS DRAWN

KEYNOTE
KEYNOTE NUMBER (SEE LEGEND ON SHEET)

ROOM EXITING INFORMATION
AREA (SQ FT)
OCCUPANT LOAD (AREA DIVIDED BY LOAD FACTOR)
OCCUPANT LOAD FACTOR (REFER TO TABLE 1004.5)
OCCUPANCY TYPE
NUMBER OF EXITS REQUIRED (REFER TO TABLE 1006.2.1)

WIC CASEWORK TAG
MANUFACTURER REFERENCE AND MODEL NUMBER
LOCK
CABINET DEPTH
CABINET HEIGHT
CABINET WIDTH

SHEET NUMBER SYSTEM

DISCIPLINE	SHEET TYPE	BUILDING LETTER, SEGMENT, (USER DEFINED)
G GENERAL	0 CODE ANALYSIS, NOTES	
C CIVIL	1 SITE PLAN	
L LANDSCAPE	2 FLOOR PLAN	USED ONLY IF REQUIRED IF NOT COLUMN IS OMITTED
A ARCHITECTURE	3 CEILING PLAN	
I INTERIORS	4 ROOF PLAN	
Q EQUIPMENT	5 EXTERIOR ELEVATIONS	
S STRUCTURAL	6 SECTIONS	
P PLUMBING	7 ENLARGED PLANS	
M MECHANICAL	8 INTERIOR ELEVATIONS	
E ELECTRICAL	9 SCHEDULES	
FA FIRE ALARM	10 DETAILS	
T TELECOM		
AV AV EQUIPMENT		
K KITCHEN		
FP FIRE PROTECTION		

SERIES ORDER
SHEET TYPE
DISCIPLINE
SEGMENT (IF APPLICABLE)
A A 1 . 1 1 A . A
BUILDING LETTER (IF APPLICABLE)
FLOOR LEVEL OR SEQUENTIAL ORDER
USER DEFINED (IF APPLICABLE)

ABBREVIATIONS

(E)	EXISTING
AB	ANCHOR BOLT
AC PAVING	ASPHALTIC CONCRETE PAVING
ACC	ACCESSIBLE/ACCESSIBLE
ACP	ACOUSTICAL CEILING PANEL
ACT	ACOUSTICAL CEILING TILE
ADJ	ADJACENT/ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
AHU	AIR HANDLING UNIT
ARCH	ARCHITECTURAL
ATT	ATTENUATION
AUTO	AUTOMATIC
BD	BOARD
BLCG	BLOCKING
BLDG	BUILDING
BUR	BUILT UP ROOFING
CABT	CABINET
CF	CUBIC FEET
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CG	CORNER GUARD
CJ	CONTROL JOINT
CL	CENTER LINE
CLF	CHAIN LINK FENCE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMP	COMPRESSION / COMPOSITE
CF	CUBIC FEET
COORD	COORDINATE
CORR	CORRUGATED
CT	CERAMIC TILE
CTSK	COUNTER SUNK
CW	CURTAINWALL
DEPR	DEPRESSED / DEPRESSION
DF	DRINKING FOUNTAIN
DIM	DIMENSION
DISP	DISPENSER
DS	DOWNSPOUT
DTL	DETAIL
DW	DISHWASHER
DWG(S)	DRAWING(S)
E/W	EACH WAY
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION / ELEVATOR
ENCL	ENCLOSE / ENCLOSURE
EOS	EDGE OF SLAB
EP	ELECTRICAL PANEL
EQ	EQUAL
ESC	ESCUTCHEON
EWC	ELECTRIC WATER COOLER
EXP	EXPOSED
FA	FIRE ALARM
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER W/ CABINET
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHS	FLAT HEAD SCREW
FIN	FINISH
FLR	FLOOR
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FP	FIREPROOFING
FR	FIRE RATED
FRG	FIRE RATED GLASS
FRP	FIBERGLASS REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FS	FINISH SURFACE
FTG	FOOTING
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GL	GLASS TYPE
GLB	GLUE LAMINATED BEAM
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTIC
HB	HOSE BIBB
HD	HEAVY DUTY
HDR	HEADER
HDWR	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HP	HIGH POINT
HSS	HOLLOW STEEL SECTION
HT	HIGH TEMP (SELF ADHERING FLASHING)
ID	INSIDE DIAMETER
INT	INTERIOR
INV	INVERT
LANDS	LANDSCAPE
LAV	LAVATORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LT WT	LIGHT WEIGHT
LVR	LOUVER
MACH	MACHINE
MB	MACHINE BOLT
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MFR	MANUFACTURER
MH	MANHOLE
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NIC	NOT IN CONTRACT
NR	NON RATED
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
O/	OVER
O/A	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OFVI	OWNER FURNISHED, VENDOR INSTALLED
OH	OPPOSITE HAND
OPER	OPERABLE
OPNG	OPENING
ORD	OVERFLOW ROOF DRAIN
P/L	PROPERTY LINE
PA	PUBLIC ADDRESS
PAF	POWDER ACTUATED FASTENER
PCC	PORTLAND CEMENT CONCRETE
PED	PEDESTRIAN
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PH	PANIC HARDWARE
PIV	POST INDICATOR VALVE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PNL	PANEL
PNT	PAINT / PAINTED
POC	POINT OF CONNECTION
POLY ISO	POLYISOCYANURATE
PREFIN	PREFINISHED
PREP	PREP / PREPARATION
PTC	POST TENSIONED CONCRETE
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PTS	PNEUMATIC TUBE STATION / SYSTEM
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QT	QUARRY TILE
R	RADIUS, RISER
RB	RESILIENT BASE
RD	ROOF DRAIN
RECEPT	RECEPTACLE
REF	REFERENCE
REFL	REFLECTED), (IVE)
REFR	REFRIGERATOR
REINF	REINFORCE/REINFORCED/ REINFORCEMENT
REM	REMOVE
RH	ROUND HEAD
RHS	ROUND HEAD SCREW
RO	ROUGH OPENING
ROW	RIGHT OF WAY
SAF	SELF ADHERING FLASHING
SCH	SCHEDULE (FOR PIPE)
SCHED	SCHEDULE / SCHEDULING
SD	STORM DRAIN / SOAP DISPENSER
SECT	SECTION
SG	SAFETY GLASS
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPOSAL
SOV	SHUT OFF VALVE
SPEC	SPECIFICATIONS
SS	STAINLESS STEEL
STC	SOUND TRAMISSION CLASS
STL	STEEL
STSMS	SELF TAPPING SHEET METAL SCREW
SUSP	SUSPENDED
SV	SHEET VINYL
SYM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
TO	TOP OF
TOC	TOP OF CURB / CONCRETE
TOP	TOP OF PARAPET
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPD	TOILET PAPER DISPENSER
TS	TACKABLE SURFACE
U/C	UNDER CABINET (OR COUNTER)
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
VAC	VACUUM
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VIF	VERIFY IN FIELD
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
WB	WOOD BASE
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WGT	WEIGHT
WH	WATER HEATER
WP	WATERPROOFING/WALL PROTECTION
WR	WATER RESISTANT
WRGB	WATER RESISTANT GYPSUM BOARD
WS	WOOD SCREW
WSCT	WAINSCOT
WWF	WELDED WIRE FABRIC

NOTE:
OTHER ABBREVIATIONS USED ON THESE DRAWINGS ARE CONSIDERED STANDARDS IN THE BUILDING INDUSTRY. CONTACT

RESPONSIBILITY MATRIX

Note: This matrix is a general guide to clarify responsibility, and not intended to be all encompassing. Work is prime contractor's scope not clarified in this matrix, but identified in drawings and specifications. Work is prime contractor's scope in the event of a discrepancy between responsible parties.

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
DIVISION 01 - GENERAL REQUIREMENTS				
Temporary facilities/toilets	X			
Temporary site fencing/dumpsters	X			
Temporary field office trailers	X			
Temporary electrical power	X			
Temporary Water	X			
Sanitization/Safety Stations	X			
All city permits, fees, water, electrical etc.	X			
Temporary phone & internet	X			
Staging area for modules on site	X			
Site security	X			
DIVISION 02 - EXISTING CONDITIONS				
Subsurface investigation	X			
Demolition & removals	X			
DIVISION 03 - CONCRETE				
Mow strips	X			
Site flatwork & accessories	X			
~~Curb & gutter~~				
Modular building foundations	X	X		
~~Non modular site foundations~~				
Foundation staking	X			
Mechanical & utility foundations	X			
Haul-off of all foundation/form spoils from site	X			
All modular building footings & stem walls	X	X		
Crawl space slurry - i.e. rat slab including vapor barrier	X			
Install foundation vents and grates	X			
Supply metal grates and frames material	X			
Foundation pins		X		
Foundation pin installation		X		
~~Modular foundation clip footings~~				
DIVISION 04 - MASONRY - Not Applicable				
DIVISION 05 - METALS				

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Building foundation flashings	X			
Building foundation & access vent grates	X			
~~ADA building handrails~~				
~~ADA building guardrails~~				
~~ADA site handrails~~				
~~ADA site guardrails~~				
~~ADA Drinking Fountain Handrails~~				
Provide/install gutters on modular buildings	X			
Storm drainage	X			
DIVISION 07 - THERMAL & MOISTURE PROTECTION				
Building dampproofing & waterproofing		X		
Standing Seam Metal roof on Modular Buildings		X		
DIVISION 08 - OPENINGS				
~~Doors & frames~~				
~~Windows & frames~~				
Door hardware	X			
~~Glazing~~				
DIVISION 09 - FINISHES				
~~Plaster & gypsum board~~				
Tackable wall panels	X			
Ceilings / Acoustical Tiling	X			
Flooring	X			
Wall finishes	X			
Painting & coatings	X			
~~Door frames & doors~~				
~~Conventional Stucco Integral Color~~				
Exterior caulking / Siding	X			
~~Interior window sills~~				
DIVISION 10 - SPECIALTIES				
Building & site ADA signage and other Site Signage	X			
DIVISION 11 - EQUIPMENT				
Security equipment - If Applicable	X			
Educational equipment (smart TVs, WAPs, smartboards, etc.)	X		X	
DIVISION 12 - FURNISHINGS				
Casework, cabinets, & countertops	X			

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Classroom furniture			X	
DIVISION 13 - Special Construction				
Engineering & DSA approval			X	
Manufacture buildings			X	
Transport cost to site			X	
City fees			X	
Special fees/costs/requirements for unexpected delivery expenses/permits/traffic controls			X	
Inplant inspection fees			X	
Interior finish	X			
DIVISION 14 - CONVEYING EQUIPMENT - Not Applicable				
DIVISION 21 - FIRE SUPPRESSION				
Fire water service - stubbed AFF w/flange 12"				
Fire water service within new building				
Fire lines underground & hydrants				
Fire sprinklers including calculations, building backflows, signage, etc. per DSA approval.				
Fire sprinkler connection				
Fire Riser				
Fire sprinkler riser connection				
Connect heat & smoke switch to fire alarm system and provide power				
DIVISION 22 - PLUMBING				
Site/under building foundation area drains	X			
All Cleanouts below finished Floor and at POC	X			
Pressure testing of all UG lines	X			
Storm drain lines & catch basins	X			
Site sewer line - within 2' of new building		X		
~~Gas service - within 2' of new building~~				
Site water service - within 2' of new building		X		
Crawlspace waste and water manifolds	X			
~~Site gas meters & foes - if applicable~~				
~~Gas service line and connection to mechanical units~~				

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Building shut off valves (water, gas, FW, etc.)	X			
Site shut off valves (water, gas, FW, etc.)	X			
~~Shut off valves & pressure reducing valves in building & HVAC units~~				
Building water service in building		X		
Plumbing fixtures	X			
Chlorination - all lines	X			
Downspout cleanouts	X			
Connect Down spouts to storm drain	X			
Connect condensate drain to waste	X			
Irrigation	X			
Planting	X			
Fencing, fencing footings & columns	X			
~~Site accessories & planters~~				
DIVISION 23 - HVAC				
~~HVAC piping & pumps within the building~~				
~~HVAC supply & return ducts & grills~~				
~~Run condensate drains to sinks per HVAC~~				
~~HVAC exhaust fans~~				
~~HVAC air cleaning devices~~				
Thermostats	X			
EMS System	X			
EMS wiring, testing, labeling, devices, etc. to ensure EMS is compatible with new HVAC units	X			
Power for EMS	X			
J-boxes within wall cavity	X	X		
EMS sensor/thermostats conductors	X			
DIVISION 26 - ELECTRICAL				
Site electrical service - to new building	X			
Interior (with occupancy sensors) & exterior building LED light fixtures	X			**Should be existing**
~~Site light fixtures & foundations~~				
Site UG trenching, backfill, & compaction	X			

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Main switch board connection	X			
Conductors to meters	X			
~~Transformers & installation of transformers~~				
Conduit pathway and conductors to MSB	X			
~~Distribution switch boards~~				
Energizing of new building & all site/building electrical components	X			
Building electrical sub panels	X		X	
Ground rods, testing, & reports	X			
Power for low voltage components	X			
Conductors from main switch board to modular subpanels	X			
Electrical conduit from MSB to crawl space subpanel stub out	X			
Power feeders to panels	X			
Power to HVAC condenser	X			
Circuit monitoring	X			
Panel ID/circuit ID labeling	X			
~~Site lighting~~				
All building exterior lighting to EMS location	X			
EMS control panel	X			
Exterior light programing	X			
Conduits connecting building wings	X	X		
~~2x4 interior dimmable LED lights~~				
Exterior LED lights	X			
Interior occupancy sensors	X			
DIVISION 27 - LOW VOLTAGE				
All necessary conduit sleeves between classroom to classroom	X			
All new to existing low voltage tie-ins (to be coordinated through the school)	X			
Testing of all low voltage lines	X			
Training of district employees for all new devices & equipment	X			
Telephone system & devices at new building	X			

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Network infrastructure	X			
Fiber optic network system	X			
Audio-video systems	X			
PA & phone system - install, equipment, cabling, testing, labeling, etc.	X			
Structured cabling	X			
Data communications	X			
Security devices	X			
Data/EMS system - install, equipment, cabling, testing, labeling, etc.	X			
All fire alarm communications & panels	X			
Fire alarm system - install, equipment, cabling, testing, labeling, etc.	X			
~~Site fire alarm systems to complete flow & tamper switches - to include all backflows, DCDAs, risers, FIV, fire hydrants, etc.~~				
Low voltage backboxes/ J-boxes	X			
Fire alarm backboxes/J-boxes	X			
Conduit pathway to IDF room	X			
Conduit pathway/tie in to all low voltage panels/devices (PA, EMS, IDF, lighting contrls,etc.)	X			
IDF cabinets, OFCI			X	
Signal termination cabinets, OFCI	X		X	
DIVISION 28 - ELECTRONIC SAFETY & SECURITY				
New building security system	X			
All new to existing security tie-ins (to be coordinated through the school)	X			
Testing of all security lines	X			
Training of district employees for all new devices & equipment	X			
DIVISION 31 - EARTHWORK				

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Site & building excavation, backfill, compaction, import, export, etc.	X			
Import/export fill to include engineered fill if applicable per soils report	X			
Rough grading (including building perimeter)	X			
Finish grading, including slopes to drain to drain within building pad area	X			
Surveying, staking (site & building footprint), etc.	X			
Finish grade, including slopes to drain (if applicable) within the building pad area, & re-grading after all removed farm work.	X			
Excavate modular building foundation pads to +/- .1' for crawl space height, per manufacturer requirements	X			
Building/foundation footings	X			
DIVISION 32 - ASPHALT CONCRETE PAVING				
Asphalt concrete paving & slurry seal (power wash prior to seal)	X			
Driveways, parking stalls & accessories, wheel stops, speed bumps, etc.	X			
Walkways	X			
Striping	X			
~~Protection bollards~~				
Gates & fencing - including footings, soil export, etc.	X			
Landscape planting	X			
Landscape irrigation systems	X			
OTHER(S)				
~~Marquee sign - if applicable~~				
~~Condenser pad~~				
Fencing	X			
Restroom accessories (soap/paper towel dispenser, mirror, grab bars, etc.)	X			
~~Restroom partitions~~				
~~Classroom accessories (soap/towel dispenser)~~				

ACTIVITY DESCRIPTION	PRIME CONTRACTOR	MODULAR CONTRACTOR	DISTRICT/ OTHERS	COMMENTS
Site SWPPP & monitoring	X			
Temporary construction keys & cores	X			
Permanent building master keys & cores	X			
Provide unobstructed truck/crane routes & access to building foundation pads, all weather access	X			
Establish building corners & surveying	X			
Projection screens - if applicable	X			
Building mounted exterior hose bibbs	X			
~~Building mounted exterior power outlets~~				
Classroom markerboards	X			
Carpet flooring	X			
Walk-off floor mats at classroom entry	X			
~~Exterior shade canopies~~				
Dust control	X			
Utility POC coordination	X			
Building Access panels	X			
~~Hand dryers~~				
Modular building delivery, craning, rigging, & erecting		X		
~~Instant hot water heaters~~				
~~Hot water heater~~				
~~Visual displays~~				
A/V systems	X			
Final cleaning	X	X		

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Δ	DESCRIPTION	DATE

FACILITY:
ABRAHAM LINCOLN ELEMENTARY
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
RESPONSIBILITY MATRIX

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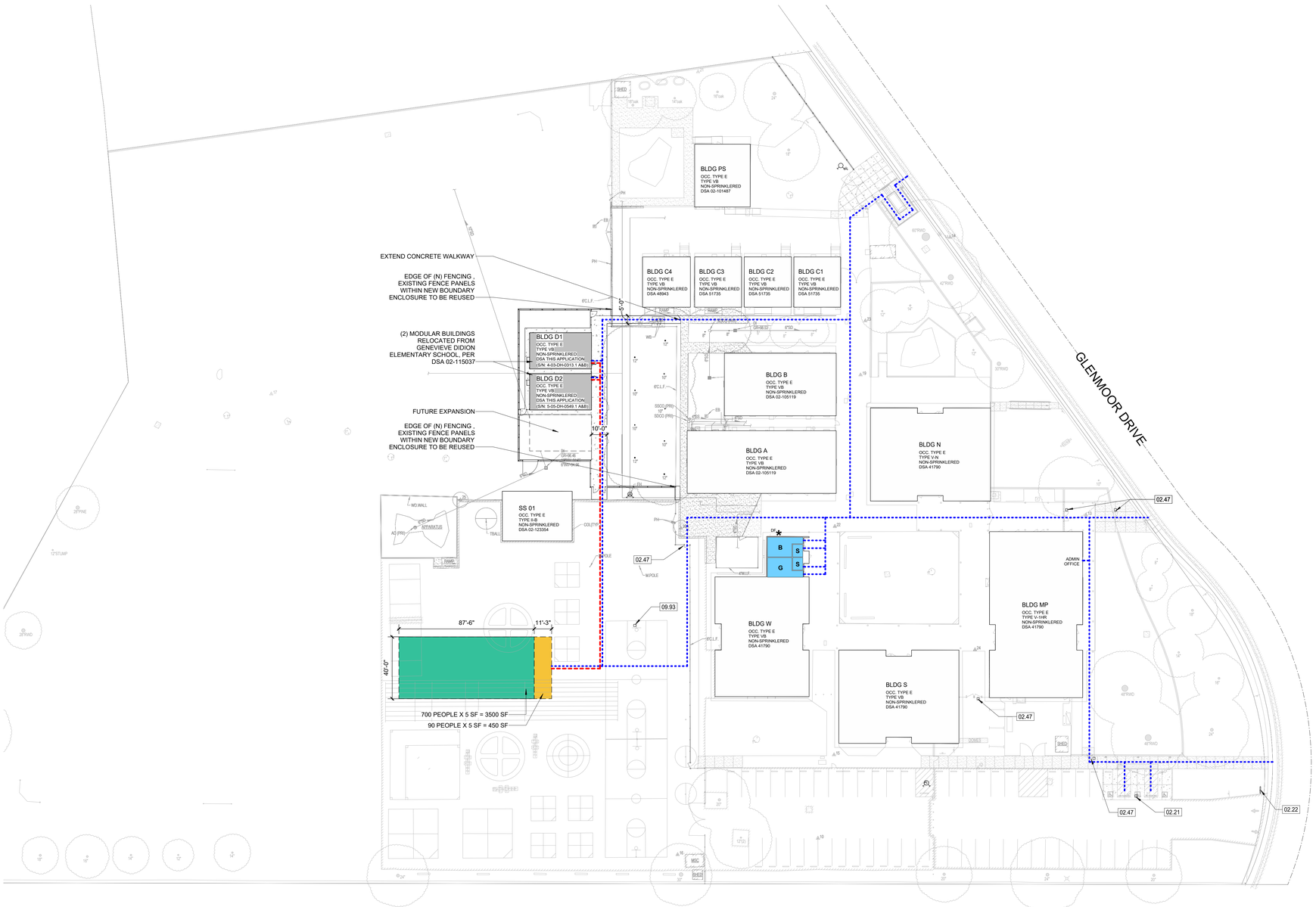

LEGEND

- (E) EXIT DISCHARGE TO SAFE DISPERSAL AREA
- ACCESSIBLE PATH OF TRAVEL, PER DSA #02-123512
- NEW PORTABLE BUILDING
- EXISTING BUILDINGS
- (E) SAFE DISPERSAL AREA
- SAFE DISPERSAL AREA
- (E) RESTROOMS PER DSA #02-114152
  - **B** - BOYS
  - **G** - GIRLS
  - **S** - STAFF
- FIRE HYDRANT - SEE CIVIL DRAWINGS
- ACCESSIBLE DRINKING FOUNTAIN PER DSA #02-114152
- FENCING

BUILDING DESIGNATIONS

BUILDING MARK	BUILDING NAME	DSA APPLICATION NUMBER
A	CLASSROOMS	02-105119
B	CLASSROOMS	02-105119
C1	CLASSROOMS	51735
C2	CLASSROOMS	51735
C3	CLASSROOMS	51735
C4	CLASSROOMS	48943
D1	CLASSROOMS	THIS APPLICATION
D2	CLASSROOMS	THIS APPLICATION
MP	ADMINISTRATION	41790
N	CLASSROOMS/RESOURCE	41790
PS	CLASSROOMS	02-101487
S	CLASSROOMS	41790
SS	SHADE STRUCTURE	02-123354
W	CLASSROOMS	41790

BUILDING CODE ANALYSIS

OCCUPANCY CLASSIFICATION (CBC 305):	E
CONSTRUCTION TYPE (TABLE 601):	VB
SPRINKLER SYSTEM (NFPA 13 903.2.1.4):	NO
ALLOWABLE STORIES (TABLE 504.4):	1
PROVIDED STORIES:	1
ALLOWABLE AREA (NS, TABLE 506.2):	9500 SF
PROVIDED AREA:	940 SF BUILDING 165 SF OF OVERHANGS (TYPICAL OF 2 BUILDINGS) 2210 SF TOTAL
ALLOWABLE HEIGHT (TABLE 504.3):	40'-0"
PROVIDED HEIGHT:	11'-4"
FIRE ALARM TIED TO (E) CAMPUS SYSTEM (NFPA 72/CBC 907):	YES

EXISTING PATH OF TRAVEL (POT): ARCHITECT STATEMENT

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE IN CHARGE STATEMENT: THE POT IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NON-COMPLIANT

1) HAVE BEEN IDENTIFIED AND
2) 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 POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF THE POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NON-CONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT TO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

PATH OF TRAVEL, TECHNICAL REQUIREMENT FOR ACCESSIBLE ROUTE

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER-FREE ACCESS ROUTE WITHOUT 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 SHALL NOT BE STEEPER THAN 1:48 AND SLOPE IN THE DIRECTION OF TRAVEL SHALL NO BE STEEPER THAN 1:20. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND FREE OF OBJECTS PROTRUDING MORE THAN 4" FROM THE WALL, ABOVE 27" AND LESS THAN 80" ABOVE THE FLOOR. ARCHITECTS SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE BATH OF TRAVEL.

TN
PN

CODE INFORMATION SITE PLAN 1

1" = 30'-0"

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ASSISTED LISTENING RECEIVER CALCULATIONS

TOTAL OCCUPANTS:	90
RECEIVER REQUIRED (4% OF OCCUPANTS PER CBC 11B-219.3, 2 MINIMUM):	4
HEARING AID COMPATIBLE RECEIVERS REQUIRED (25% OF RECEIVERS PER CBC 11-B219.3, 2 MINIMUM):	2

KEYNOTES

02.21	(E) ACCESSIBLE PARKING PER, DSA #02-123354
02.22	(E) PARKING LOT ENTRANCE SIGN
02.47	(E) GATE PER #02-123354
09.93	WITH 1' HIGH LETTERS, STENCIL PAINT, "SAFE DISPERSAL AREA," ON BACKSIDE OF BACKSTOP

NOTES

1. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS
2. CONTRACTOR IS RESPONSIBLE FOR REPAIR/REPLACEMENT OF ALL HARDSCAPE/PLANTING OUTSIDE OF LIMIT OFWORK LINE FOR CONNECTION OF UNDERGROUND UTILITIES
3. ALL CONSTRUCTION AND DEMOLITOIN SHALL BE IN ACCORDANCE WITH CHAPTER 33 OF THE CBC AND CFC, AND THE WRITTEN SITE SAFETY PLAN
4. (E) ASSISTED LISTENING DEVICES AVAILABLE AT ADMIN OFFICE

FACILITY:

ABRAHAM LINCOLN ELEMENTARY
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

CODE INFORMATION SITE PLAN

DD SET

DATE: **xxxx.xx.xx**

CLIENT PROJ NO:

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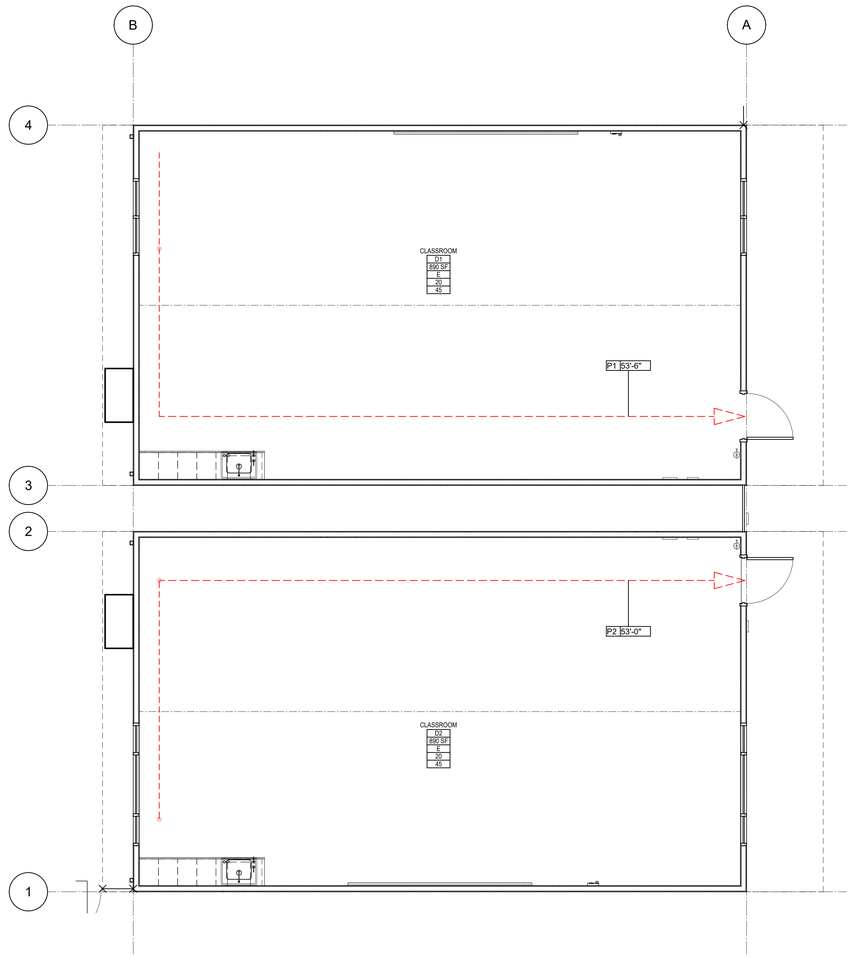
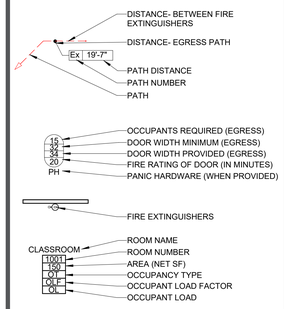


LEGEND



EGRESS INFORMATION

1. EXIT ACCESS TRAVEL DISTANCE (CBC 1017.2)
   E OCCUPANCY = 200 FT (WITHOUT SPRINKLER SYSTEM)
2. EGRESS WIDTH (CBC 1005)
   DOOR EXITS: NUMBER OF OCCUPANTS x 0.2, 32" MIN.
3. SPACES WITH ONE EXIT OR ONE EXIT DOORWAY (CBC 1006.2.1)
   MAXIMUM OCC. LOAD = 49
   MAXIMUM COMMON PATH OF TRAVEL DISTANCE = 75 FT
4. MAXIMUM TRAVEL DISTANCE TO FIRE EXTINGUISHER (CBC 906.3(1)) = 75 FT

EGRESS PATHS- LEVEL 1

PATH	DISTANCE
P1	53'-6"
P2	53'-0"

TN
PN

EXITING ANALYSIS 1
1/4" = 1'-0"

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SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
EXITING ANALYSIS

DD SET

DATE: xxxx.xx.xx
CLIENT PROJ NO:
SHEET:

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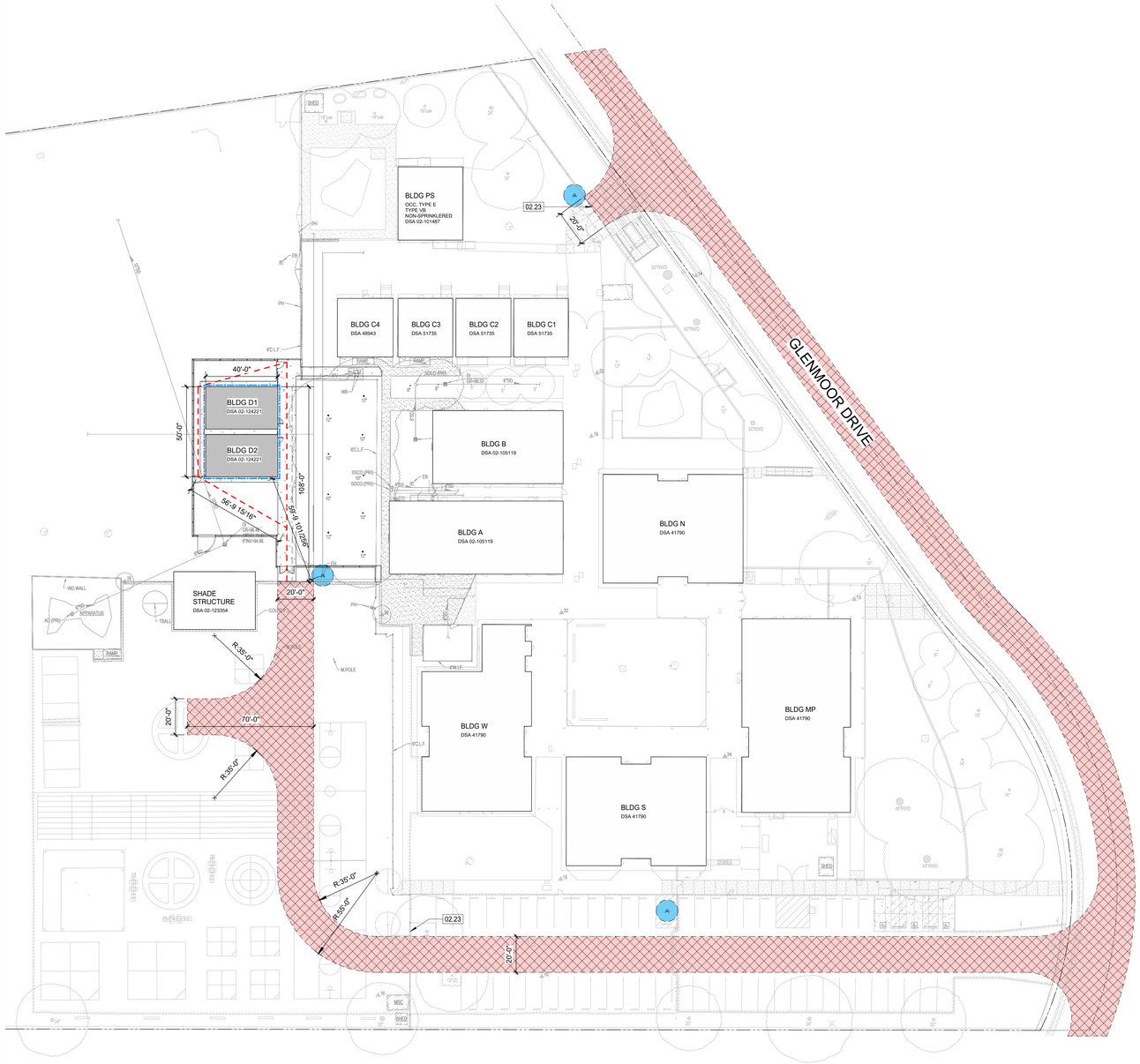


LOCAL FIRE AUTHORITY ACCESS PLAN 1

1" = 30'-0"

DSA 810

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

To facilitate the Division of the State Architect's (DSA) fire and life safety plan review of project site conditions, DSA requires the design professional to provide the following information at time of project submittal for projects consisting of construction of a new campus, construction of new building(s), additions to existing buildings, and for site alternate design means for fire department emergency vehicle access, and fire suppression water supply.

Information associated with compliance items 1 through 3 below is to be provided for all project types indicated above. Information associated with items 4 through 7 is to be completed when an alternate means is utilized. Acknowledgement by the school district and signature from the Local Fire Authority (LFA) is only required when an alternate design means is being requested.

The Project Information and Fire & Life Safety Information sections are to be completed for all projects and imaged onto the fire access site plan. When an alternate design/means is proposed, all sections on pages 1 and 2 are to be completed and imaged on the fire access site plan.

For additional information refer to the instructions at the end of this form and DSA Policy *PL 09-01: Fire Flow for Buildings*.

PROJECT INFORMATION	
School District/Owner:	Sacramento City Unified School District
Project Name/School:	Abraham Lincoln Elementary
Project Address:	3324 Glenmoor Drive, Sacramento, CA 95827

FIRE & LIFE SAFETY INFORMATION				
1.	Has a fire hydrant flow test been performed within the past 12 months? *(If yes, provide a copy of the test data.)*	Yes ☑		No ☐
2.	Was the fire hydrant water flow test performed as part of this LFA review?	Yes ☑		No ☐
3.	Is the project located within a designated fire hazard severity zone (FHSZ) as established by Cal-Fire? *(If yes, indicate FHSZ classification below.)*	Yes ☐		No ☑
	Refer to the following website for FHSZ locations: Fire Hazard Severity Zones in State Responsibility Area	Moderate ☐	High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*			WIFA ☐

	CONDITION MEANS AND METHODS RESOLUTION	ALTERNATE ACCEPTED			
		Yes	No	N/A	N/R
4.	Emergency vehicle access roadways do not meet CFC requirements.				
4a.	**Acceptable Alternate:** Emergency vehicle and personnel access as proposed by the project architect is acceptable for providing fire suppression and protection of life and property.				
5.	**Fire Hydrants:** Number and spacing does not meet CFC requirements.				
5a.	**Acceptable Alternate:** Number of fire hydrants and spacing as proposed by the project architect is acceptable for fire suppression and protection of life and property.				
6.	**Fire Hydrants:** Water flow and pressure are less than CFC minimum.				
6a.	**Acceptable Alternate:** The available flow and pressure is acceptable for providing fire suppression and protection of life and property.				
7.	Location of fire department connection(s) serving fire sprinkler systems or standpipe systems does not meet CFC requirements.				
7a.	**Acceptable Alternate:** The location of fire department connection serving the fire sprinkler system and/or standpipe system is acceptable for providing fire suppression and protection of life and property.				

School District Acceptance of Acceptable Design Alternates

By signing this form, the school district acknowledges and accepts the proposed design as an alternative to California Building Code (CBC) and California Fire Code (CFC) minimum requirements, as indicated by one or more of the conditions indicated at items 4a, 5a, 6a or 7a, for providing fire and life safety protection of life and property.

Accepted by: _____ Title: _____

Signature: _____ Date: _____

LOCAL FIRE AUTHORITY (LFA) INFORMATION	
LFA Agency Name:	
LFA Review Official:	
Title:	Work Phone:
Work Email:	

LFA Reviewer's Signature: _____ Date: _____

CALIFORNIA AMERICAN WATER

April 21, 2026

Anthony Tassano
Warren Consulting Engineers
1117 Windfield Way, Suite 110
El Dorado Hills, CA 95762

SUBJECT: HYDRANT FLOW TEST – SUBURBAN ROSEMONT
Abraham Lincoln Elemeutary School (3324 Glenmoor Dr, Sacramento, CA, 95827)

Dear Anthony Tassano:

On April 16, 2026, at approximately 12:30P.M., a flow test was conducted by California American Water staff using fire hydrants located along Glenmoor Drive (see Attachment "A"- Location Map). These fire hydrants are located in the Suburban-Rosemont System of California American Water's Sacramento District. The following measurements were collected during the flow test:

Residual Hydrant (HSC-1766)
Static Pressure = 68 psi
Residual Pressure = 64 psi

Flowing Hydrant (HSC-1765)
Outlet Diameter = 2.5 inches
Pitot Pressure = 50 psi

The calculated results of this flow test indicate that, based on the data collected at the time and date tested and under the exhibited system operational conditions, the distribution system in this area would be capable of delivering a flow of approximately **3,500 gpm, for a 2-hour duration, with a 20 psi residual system pressure** (see fire hydrant flow test information, Attachment "B").

Hydrant flow tests are known to fluctuate with operational conditions, routine maintenance, and system demands, which are influenced by time of day, season, temperature, and day of the week. Static water pressures fluctuate in accordance with system demands; water systems are designed with the intent of meeting CPUC GO 103 & Title 22 requirements, with minimum operating pressures of 40 psi for normal operation, 30 psi for peak hour and 20 psi for fire flow conditions.

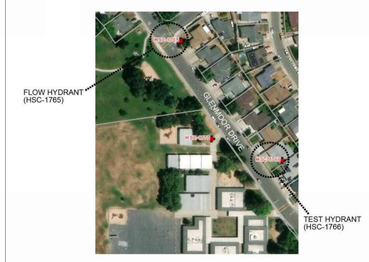
I hope this information satisfies your needs. Please contact me at (916) 397-2492, or at meghan.pistolesi@amwater.com if you have questions or require additional information.

Sincerely,

Meghan Pistolesi
Engineering Project Specialist

Attachment A

FIRE HYDRANT FLOW TEST LOCATION MAP
CALIFORNIA AMERICAN WATER – SUBURBAN-ROSEMONT



Attachment "B"

CALIFORNIA AMERICAN WATER

FIRE HYDRANT FLOW TEST INFORMATION

Requested By: Anthony Tassano - Warren Consulting Engineers
Project Name: Abraham Lincoln Elementary School
Project Address: 3324 Glenmoor Dr, Sacramento, CA, 95827
CAW System: Suburban-Rosemont
Test Date & Time: April 16, 2026; 12:30P.M
Performed By: Jose V., Vaughn G.

Residual Hydrant No.: HSC-1766 **Location:** Along Glenmoor Drive
Flowing Hydrant No.: HSC-1765 (see Location Map in Attachment "A")

Field Observations:

Static Pressure	68	psi	Pressure measured at the residual hydrant with no hydrants flowing
Residual Pressure	64	psi	Pressure measured at the residual hydrant when flow hydrant is flowing
Pitot Pressure, P	50	psi	Pitot gage reading taken from the outlet of flowing hydrant
Outlet Diameter, d	2.5	in	Opening size of hydrant outlet being flowed

Calculations:

a. Determination of Discharge

$$Q_F = 29.83\, c\, d^2 \sqrt{P}$$

Where:
c = coefficient of discharge, 0.9
d = diameter of outlet, in
P = pitot gauge pressure, psi
Q_F = 1,186 gpm Actual hydrant flow during test

b. Determining Available Flow

$$Q_R = Q_F \times \frac{h_r^{0.54}}{h_f^{0.54}}$$

Where:
h_r = pressure difference between static pressure and the desired residual pressure of 20 psi
h_f = pressure difference between static pressure and the residual pressure, psi
Q_R = 3,500 gpm Available flow @ 20 psi residual pressure

The calculated results shown above indicate that the distribution system in this area where the hydrant was tested exhibited that it would be capable of delivering a flow of approximately 3,500 gpm at 20 psi residual pressure.

Notes: The above flow test and calculations were in accordance with the recommended practices for fire flow testing per AWWA M17 Manual and NFPA 291 Standards. The company provides no warranty that it will supply at any specific flows, quantities or pressures for fire protection or other purposes, except as required by law. For questions, please contact Meghan Pistolesi at (916) 397-2492 or at meghan.pistolesi@amwater.com

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Δ	DESCRIPTION	DATE

LEGEND

- NEW BUILDING
- EXISTING BUILDINGS
- EXISTING EMERGENCY/FIRE ACCESS LANE, PER DSA #02-123354
- EMERGENCY PERSONNEL APPROVED ROUTE (DISTANCE <150' PER CFC 503.1.1)
- FIRE HYDRANT JURISDICTION (400'-0" MAX CFC 507.5.1 MEASURED BY AN APPROVED ROUTE)
- EXISTING FIRE HYDRANT - SEE CIVIL DRAWINGS

KEYNOTES

02.23 (E) 20'0" WIDE FIRE ACCESS GATES W/ KNOX BOX

NOTES

FACILITY:
ABRAHAM LINCOLN ELEMENTARY
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

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CIVIL ABBREVIATIONS AND LEGEND

ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED ON THESE PLANS.

AB	AGGREGATE BASE
AC	ASPHALTIC CONCRETE
AD	AREA DRAIN
APN	ASSESSOR'S PARCEL NUMBER
ARV	AIR RELEASE VALVE
ASB	AGGREGATE SUB-BASE
BO	BLOW-OFF VALVE
BV	BUTTERFLY VALVE
BW	BACK OF WALK
C/L	CENTERLINE
CB	CATCH BASIN
CL	CLASS
CMP	CORRUGATED METAL PIPE
CATV	CABLE TELEVISION
CO	CLEANOUT
COMM	COMMUNICATION
CONC.	CONCRETE
CONST.	CONSTRUCT
CR	CURB RETURN
CS	CONCRETE SURFACE
DC	DOUBLE CHECK VALVE
DDC	DOUBLE DETECTOR CHECK VALVE
DG	DECOMPOSED GRANITE
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
DS	DOWNSPOUT
E	ELECTRIC
EP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX	EXISTING
FS	FIRE SERVICE LINE
FDC	FIRE DEPARTMENT CONNECTION
FL	FLOWLINE
FM	SANITARY SEWER FORCE MAIN
FF	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
G	GAS
GR	GRATE ELEVATION
GRD	GRADE ELEVATION
GV	GATE VALVE
HB	HOSE BIBB
HBD	HEADER BOARD
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
INV	PIPE INVERT ELEVATION
JP	JOINT UTILITY POLE
LF	LINEAL FEET
LIP	LIP OF GUTTER
LT	LEFT
MS	MOWSTRIP
NTS	NOT TO SCALE
OH	OVERHEAD
PCC	PORTLAND CEMENT CONCRETE
PD	PLANTER DRAIN
PIV	POST INDICATOR VALVE
P/L	PROPERTY LINE
PP	POWER POLE
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
R	RADIUS
RIM	MANHOLE RIM ELEVATION (SOLID COVER)
RP	REDUCED PRESSURE BACKFLOW PREVENTER
RW	RIGHT OF WAY
SCH	SCHEDULE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SG	SUBGRADE ELEVATION
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STD	STANDARD
S/W	SIDEWALK
T	TELEPHONE
TC	TOP OF CURB
TD	TRENCH DRAIN
TDCB	TRENCH DRAIN CATCH BASIN
TP	TELEPHONE POLE
TR	TOP OF RAMP ELEVATION
TRW	TOP OF RETAINING WALL
TSW	TOP OF SEAT WALL
TW	TOP OF WALK ELEVATION
U	UTILITY
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
VCP	VITRIFIED CLAY PIPE
W	WATER
W/	WITH
W/O	WITHOUT
WV	WATER VALVE

LEGEND

NOTE: NOT ALL SYMBOLS MAY BE USED ON THESE PLANS.

PROPOSED GRADING & DRAINAGE SYMBOLS:

8" SD	STORM DRAIN LINE (SIZE AND FLOW SHOWN)
	STORM DRAIN MANHOLE (SDMH)
	CATCH BASIN (CB)
	DROP INLET (DI)
	AREA DRAIN (AD)
	PLANTER DRAIN (PD) OR FLOOR DRAIN (FD)
CO	STORM DRAIN CLEANOUT
99.99	ELEVATION
FF=100.00	FINISHED FLOOR ELEVATION
PAD=99.33	BUILDING PAD ELEVATION
	CONCRETE SIDEWALK
	GRADED DIRECTION FOR DRAINAGE FLOW
	SWALE
	SLOPE
	TREE TO BE REMOVED
	RETAINING WALL

PROPOSED SANITARY SEWER SYMBOLS:

6" SS	SANITARY SEWER LINE (SIZE AND FLOW SHOWN)
	SANITARY SEWER MANHOLE (SSMH)
CO	SEWER CLEANOUT FLUSHER BRANCH

PROPOSED WATER SYMBOLS:

8" W	WATER LINE & SIZE
8" FS	FIRE LINE & SIZE
8" DW	DOMESTIC WATER LINE & SIZE
8" RW	RECLAIMED WATER LINE & SIZE
8" IRR	IRRIGATION SERVICE LINE & SIZE
8" NP	NON POTABLE WATER LINE & SIZE
8" SP	FIRE SPRINKLER SERVICE LINE & SIZE
	GATE VALVE
M	WATER METER
FH	FIRE HYDRANT ASSEMBLY
FDC	FIRE DEPARTMENT CONNECTION
DC	DETECTOR CHECK VALVE
DDC	DOUBLE DETECTOR CHECK VALVE
RP	REDUCED PRESSURE BACKFLOW PREVENTER
	BUTTERFLY VALVE
1"	AIR RELEASE VALVE + SIZE
1"	BLOW-OFF VALVE + SIZE
PIV	POST INDICATOR VALVE

DEMOLITION GENERAL NOTES

1. REFER TO ARCHITECTURAL, LANDSCAPE, ELECTRICAL AND PLUMBING PLANS FOR ADDITIONAL DEMOLITION ITEMS.
2. IN THE EVENT THAT ANY UNUSUAL CONDITIONS NOT COVERED BY THE GEOTECHNICAL INVESTIGATION REPORT OR ARE ENCOUNTERED DURING GRADING OPERATIONS THE GEOTECHNICAL ENGINEER AND THE ARCHITECT SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTIONS.
3. ADDITIONAL DEMOLITION INFORMATION MAY BE SHOWN ON THE GRADING, DRAINAGE, AND UTILITY PLANS, AND THOSE PLANS PREPARED BY OTHER DISCIPLINES FOR THIS PROJECT.
4. ALL DEMOLISHED ITEMS SHALL BE DISPOSED OF OFFSITE AT A SUITABLE, LEGAL, DUMP SITE OR OTHER FACILITY.
5. ALL DISPOSED OF MATERIALS SHALL BE RECYCLED IF POSSIBLE.
6. THE SCHOOL DISTRICT SHALL HAVE SALVAGE RIGHTS TO ANY DEMOLISHED ITEMS SHOWN HEREON. THE CONTRACTOR SHALL GIVE THE DISTRICT NOTICE 7 DAYS PRIOR TO THE START OF DEMOLITION. THE DISTRICT SHALL MOVE ANY RETAINED ITEMS OUT OF THE CONTRACTORS WORK AREA, UNLESS ANOTHER ARRANGEMENT IS MADE WITH THE CONTRACTOR. ANY REMAINING ITEMS BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. ANY ITEMS NOT SHOWN FOR REMOVAL SHALL REMAIN AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION TO A REASONABLE EXTENT.
7. EXISTING UTILITY STRUCTURES IN AREAS OF NEW PAVING SHALL BE REMOVED AND REPLACED WITH NEW BOX/COVER AT NEW GRADE UNLESS SPECIFICALLY NOTED OTHERWISE.
8. ITEMS OUTSIDE THE LIMITS OF DEMOLITION SHALL REMAIN AND BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.
9. EXISTING UTILITY STRUCTURES AND PIPING NOT SHOWN ON DEMOLITION PLAN TO BE REMOVED SHALL REMAIN AND BE PROTECTED.
10. SAWCUTS AND SUBSEQUENT PATCH BACK OF CONCRETE WALKS, SHALL BE TO THE EXISTING CONCRETE JOINT BEYOND THE NEAREST LOCATION OF DEMOLITION AS SHOWN. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE, SHOW AND COORDINATE WITH EXISTING JOINTS, HOWEVER IF FIELD CONDITIONS ARE OTHERWISE, IT IS UNDERSTOOD TO REMOVE AND PATCH BACK TO THE NEAREST JOINTS BEYOND DEMOLITION.
11. PRIOR TO THE START OF CONSTRUCTION, VERIFY AND POTHOLE ALL UTILITY POINTS OF CONNECTION FOR LOCATION, DEPTH, AND SIZE. IF CONFLICT IS FOUND, CONTACT THE ENGINEER IMMEDIATELY FOR DIRECTION.
12. WITHIN LANDSCAPE AREAS TO BE DEMOLISHED THERE MAY BE EXISTING IRRIGATION LINES NOT SHOWN ON THIS PLAN. CONTRACTOR SHALL REMOVE LATERAL LINES AND HEADS ENCOUNTERED. MAIN LINES AND CONTROL WIRES MAY ONLY BE REMOVED PROVIDED THAT ROUTING IS KNOWN AND REMOVAL WILL NOT DEACTIVATE AN IRRIGATION SYSTEMS INTENDED TO REMAIN. IF CONFLICT IS FOUND, CONTACT THE ENGINEER FOR DIRECTION.
13. COORDINATE REMOVAL OF LANDSCAPE ITEMS WITH LANDSCAPE PLANS.

GENERAL NOTES

811 Know what's below. Call before you dig.

1. THE TYPES, LOCATIONS, SIZES, AND/OR DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, LOCATIONS AND DEPTHS OF SUCH UNDERGROUND UTILITIES. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, WARREN CONSULTING ENGINEERS CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES, NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE PLANS. THE CONTRACTOR OR ANY SUBCONTRACTOR FOR THIS CONTRACT SHALL NOTIFY MEMBERS OF UNDERGROUND SERVICE ALERT (USA) TWO (2) WORKING DAYS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK BY CALLING TOLL FREE 1-800-227-2600, OR 811.
2. WARREN CONSULTING ENGINEERS, INC. (WCE) ASSUMES NO RESPONSIBILITY FOR ERRORS IN PHYSICAL LOCATION OF IMPROVEMENTS, HORIZONTAL OR VERTICAL. IN ADDITION, ANY SUCH ERRORS IN PHYSICAL LOCATION MAY AFFECT THE INTENDED DESIGN OF SUCH IMPROVEMENTS AND WCE CANNOT BE HELD RESPONSIBLE FOR SUCH CONDITIONS WHICH ARE A RESULT OF ERRORS IN SURVEYING, OR IMPROPER CONSTRUCTION.
3. IF SUBSURFACE CULTURAL RESOURCES, REMAINS, AND/OR ARTIFACTS ARE UNCOVERED DURING PROJECT CONSTRUCTION, ALL WORK IN THE VICINITY SHALL BE STOPPED UNTIL SUCH ITEMS CAN BE ASSESSED BY AN APPROPRIATE MEMBER OF THE COUNTY ENVIRONMENTAL IMPACT SECTION STAFF.
4. CONTRACTOR AGREES THAT HE/SHE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY: THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS: AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
5. THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT FROM THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL SAFETY FOR ALL EXCAVATIONS OF 5 FEET OR MORE IN DEPTH.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE NECESSARY PRE-CONSTRUCTION SITE REVIEWS TO DETERMINE NECESSARY MEANS AND METHODS TO COMPLETE THE IMPROVEMENTS SHOWN ON THESE PLANS.
7. WHERE IMPROVEMENTS LIE WITHIN AN EXISTING DEVELOPED AREA, CONTRACTOR SHALL USE CAUTION WHEN ACCESSING THE SITE THROUGH THESE EXISTING IMPROVEMENTS. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT ANY SUCH EXISTING IMPROVEMENTS OUTSIDE THE PROJECT BOUNDARY, OR EXISTING IMPROVEMENTS WITHIN THE BOUNDARY WHICH ARE TO REMAIN. PROPER PRECAUTIONS SHALL BE PROVIDED AND MAINTAINED THROUGHOUT CONSTRUCTION. ANY DAMAGE SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO KEEP DETAILED RECORDS OF MINOR CHANGES OR ADJUSTMENTS MADE DURING CONSTRUCTION (WHICH WERE NOT FORMALLY ISSUED). UPON PROJECT COMPLETION, THESE RECORDS AND/OR INFORMATION SHALL BE PROVIDED TO THE OWNER AND WARREN CONSULTING ENGINEERS, INC. UNLESS AN OFFICIAL "AS-BUILT" SET OF PLANS IS A REQUIREMENT OF THE CONTRACT. IF AS-BUILT PLANS ARE A REQUIREMENT OF THE CONTRACT, REFER TO SPECIFICATIONS FOR AS-BUILT DELIVERABLE REQUIREMENTS.
9. IN VEHICULAR PATHWAYS, EXISTING ASPHALTIC AND/OR CONCRETE SURFACES SHALL BE CUT TO A NEAT AND STRAIGHT LINE, PARALLEL OR PERPENDICULAR TO THE VEHICULAR TRAVELED PATH. THIS IS TYPICALLY THE ROADWAY CENTERLINE, BUT MAY VARY. THAT SAWCUT EDGE SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION SO A CLEAN EDGE REMAINS FOR PATCH BACK.. IF EDGE IS DAMAGED, A NEW SAW CUT WILL BE REQUIRED. THE EXPOSED EDGE SHALL BE "TACKED" WITH EMULSION PRIOR TO PAVING.
10. NO BURNING OR BLASTING SHALL BE ALLOWED ONSITE UNLESS SPECIFICALLY ADDRESSED ON PLANS, OR SPECIFICALLY APPROVED AND COORDINATED WITH THE ARCHITECT, ENGINEER, AND LOCAL AGENCY OR OTHER ADMINISTRATIVE AUTHORITY.
11. SUBGRADE AND RESULTING FINISHED GRADE SHALL BE CONSTRUCTED SMOOTH AND UNIFORM BETWEEN SPOT ELEVATIONS, CONTOURS OR OTHER STRUCTURE ELEVATIONS SHOWN ON GRADING OR OTHER PLANS. NO MOUNDS, RUTS, DEPRESSIONS OR OTHER GRADING DEFICIENCIES WILL BE ALLOWED UNLESS SPECIFICALLY SHOWN ON PLANS.
12. ON NEW WATER SYSTEMS, SERVICE LATERALS SHALL BE MADE USING APPROPRIATE "TEE" AND "WYE" FITTINGS. SADDLE TAPS WILL ONLY BE ALLOWED WHEN MAKING CONNECTIONS TO EXISTING WATER MAINS.
13. CURING COMPOUND SHALL BE APPLIED IN A CONTINUOUS SOLID WET FLOWING COAT. ANY "SPOTTY" APPLICATIONS SHALL BE RECOATED IMMEDIATELY. APPLICATION SHALL BE INSPECTED BY PROJECT INSPECTOR DURING APPLICATION.
14. EMBEDMENT OF FEATURES IN CONCRETE PAVING, CURBS, OR WALLS, SUCH AS SQUARE OR ROUND TUBING, POSTS, OR COLUMNS, STEEL BOLTED PLATES, OR OTHER STRUCTURES, SHALL REQUIRE ADDITIONAL SCORE OR EXPANSION JOINTS TO PREVENT UNCONTROLLED CRACKING. THOSE ADDITIONAL JOINTS MAY OR MAY NOT BE SPECIFICALLY SHOWN ON PLANS BUT SHALL BE PROVIDED BY THE CONTRACTOR.
15. EMBEDMENT OF FEATURES IN CONCRETE PAVING, CURBS, OR WALLS, SUCH AS SQUARE OR ROUND TUBING, POSTS, OR COLUMNS, STEEL BOLTED PLATES, OR OTHER STRUCTURES, SHALL REQUIRE A MINOR ADJUSTMENT OF REBAR WITHIN CONCRETE TO ALLOW FOR SUCH STRUCTURE. THAT REBAR ADJUSTMENT MAY NOT BE SPECIFICALLY SHOWN ON PLANS.
16. NO MORE THAN 1 GALLON OF WATER PER YARD OF CONCRETE CAN BE ADDED TO THE TRUCK AFTER ARRIVAL TO PROJECT SITE. THE ADDITION OF WATER CAN ONLY BE ADDED UNDER THE SUPERVISION OF THE CONCRETE INSPECTOR OR LABORATORY TECHNICIAN.
17. WHEN PUMPING CONCRETE FOR PLACEMENT, ABSOLUTELY NO WATER IS TO BE ADDED TO PUMP HOPPER. ANY WATER ADDED TO HOPPER WILL BE REASON FOR CONCRETE REJECTION AT THE CONTRACTORS EXPENSE.
18. ALL CONTRACTION/CONSTRUCTION JOINTS "CJ" SHALL BE 1/4 THE SLAB THICKNESS DEEP, BUT NO LESS THAN 1" FOR CONTROLLING OF CRACKING. CONTRACTOR SHALL EXERCISE CAUTION WHEN FINAL TROWELING OF CONCRETE SO AS NOT TO FILL IN THESE JOINTS WITH CONCRETE CREAM. ANY CRACKS OUTSIDE OF JOINTS WHICH WERE CONSTRUCTED LESS THAN 1" DEEP, SHALL BE CAUSE FOR CONCRETE SLAB(S) TO BE REMOVED AND REPLACE AT CONTRACTORS EXPENSE.
19. ANY SCREED BOARDS SET WITHIN CONCRETE SLABS SHALL BE AN "OVERHEAD SCREED" SO THERE IS NO INTERFERENCE WITH THE PLACEMENT AND ALIGNMENT OF SLAB REINFORCING.
20. 3-1/2" FELT JOINTS WILL NOT BE ACCEPTED. PROVIDE A FULL 4" FELT JOINT FOR 4" SLAB CONSTRUCTION, AND A 6" FELT JOINT FOR A 6" SLAB SLAB CONSTRUCTION.
21. SHOULD ANY SHRINKAGE CRACKS OCCUR OUTSIDE OF EITHER THE EXPANSION JOINTS OR CRACK CONTROL JOINTS, THEN THE CONCRETE SLAB SHALL BE SAWCUT AT THE NEAREST JOINTS ON EACH SIDE OF THE CRACK AND THE CONCRETE SECTION SHALL BE, REMOVED AND REPLACED. NEW CONCRETE SHALL BE DOWELED INTO EXISTING CONCRETE PER DRAWING DETAIL.
22. ALL AREAS DISTURBED BY GRADING OPERATIONS WHETHER SHOWN ON THE DRAWINGS OR NOT SHALL BE HYDROSEEDED UNLESS OTHERWISE NOTED. HYDRO SEEDING SHALL CONFORM TO LOCAL CITY/COUNTY STANDARDS.
23. REPAIR OR PATCHING OF GALVANIZED METALS, SUCH AS AFTER WELDING GALVANIZED COMPONENTS, SHALL BE MADE USING A ZINC COMPOSITION "HOT STICK" APPLICATION PER ASTM A 780-01. GALVANIZING PAINTS WILL NOT BE ALLOWED.
24. AT LIMITS OF NEW PAVEMENT OR CURBS ADJACENT TO LANDSCAPING PROVIDE A 4:1 MINIMUM TRANSITION TO EXISTING GRADE WITH TOPSOIL. ADJUST EXISTING IRRIGATION HEADS TO FINISH GRADE AND PROVIDE SOD IN GRASS AREAS TO RESTORE TO EXISTING CONDITION.
37. TRANSITION BETWEEN PAVED SURFACES AND LANDSCAPE AREAS SHALL BE NO GREATER THAN 1", UNLESS NOTED OTHERWISE.
38. WITHIN LIMITS OF WORK THERE MAY BE EXISTING IRRIGATION LINES NOT SHOWN ON THIS PLAN. CONTRACTOR SHALL REMOVE LATERAL LINES AND HEADS ENCOUNTERED. MAIN LINES AND CONTROL WIRES MAY ONLY BE REMOVED PROVIDED THAT ROUTING IS KNOWN AND REMOVAL WILL NOT DEACTIVATE AN IRRIGATION SYSTEMS INTENDED TO REMAIN. IF CONFLICT IS FOUND, CONTACT THE ARCHITECT FOR DIRECTION.
39. GENERAL CONTRACTOR IS REQUIRED TO HIRE A LANDSCAPE SUBCONTRACTOR TO PERFORM ALL LANDSCAPE AND IRRIGATION REPAIRS.
40. WIDTH OF NEW SIDEWALKS SHALL MATCH WIDTH OF EXISTING, ADJACENT, SIDEWALKS.
41. SEE ARCHITECTURAL PLANS FOR EXPANSION AND CONTROL JOINT LAYOUT.
42. ADJUST TO FINISH GRADE ALL UTILITY BOXES, FRAMES, COVERS SLEEVES, POST HOLES GRATES, ETC. FOUND IN AREA OF WORK, WHETHER SHOWN OR NOT. CLEAN OR REPLACE AS NECESSARY TO ENSURE PROPER SEATING.
43. ALL NEW ASPHALT PAVING TO BE PROVIDED WITH 2 COATS OF SEALCOAT.
43. PRIOR TO NEW SEALCOAT ON EXISTING ASPHALT SURFACES, FILL ALL CRACKS 1/4" INCHES OR WIDER WITH AN APPROVED CRACK FILLER.
44. FOR ACCESSIBLE PATH OF TRAVEL REQUIREMENTS SEE ARCHITECTURAL SHEETS.
45. PERCENT OF SLOPE SHOWN ON ARROWS ARE MAXIMUM SLOPES AND NOT INTENDED TO SUPERCEDE SLOPES DEFINED BY SPOT ELEVATIONS. 0.0% MAX.
46. WITHIN THE LIMITS OF ACCESSIBLE PARKING AREA AND ACCESSIBLE DROP OFF ZONE THE SLOPE OF PAVEMENT SHALL NOT EXCEED 1.9% IN ANY DIRECTION.
47. SLOPE OF FINISHED PAVING TO BE 1% MINIMUM FOR ASPHALT, 0.5% MINIMUM FOR CONCRETE AND THE MAXIMUM SLOPE SHALL BE AS FOLLOWS;

    CROSS SLOPE PERPENDICULAR TO PATH OF TRAVEL - 1.9%
    DIRECTION OF TRAVEL - 4.9%
    RAMP IN DIRECTION OF TRAVEL - 8.0%
    PLAZA 1.9% - IN ANY DIRECTION
48. THE MINIMUM SLOPE AWAY FROM THE BUILDING ON PAVED SURFACES SHALL BE 1% MINIMUM AND 2% MAXIMUM.
49. TRANSITIONS BETWEEN CONCRETE AND OR ASPHALT SURFACES SHALL BE FLUSH, UNLESS NOTED OTHERWISE BY CURB OR STEP.

CIVIL SHEET INDEX

C0.1 CIVIL GENERAL NOTES AND ABBREVIATIONS
C0.2 TOPOGRAPHIC SURVEY
C1.1 DEMOLITION PLAN
C2.1 GRADING AND PAVING PLAN
C3.1 UTILITY PLAN
C4.1 FENCING PLAN
C5.1 DETAILS AND SECTIONS
C5.2 DETAILS AND SECTIONS

AGENCY APPROVAL:

Sacramento City Unified School District

HMC DESIGN FOR GOOD Architects
3186-077-000
2101 CAPITOL AVENUE, SUITE 100,
SACRAMENTO, CA, 95816
916 368 7990 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY J. TASSANO NO. C74698 OF CALIFORNIA

WCE
WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

FACILITY:

3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

CIVIL GENERAL NOTES AND ABBREVIATIONS

CONSTRUCTION DOCUMENTS

DATE: 2026.03.04 | CLIENT PROJ NO: -

SHEET:

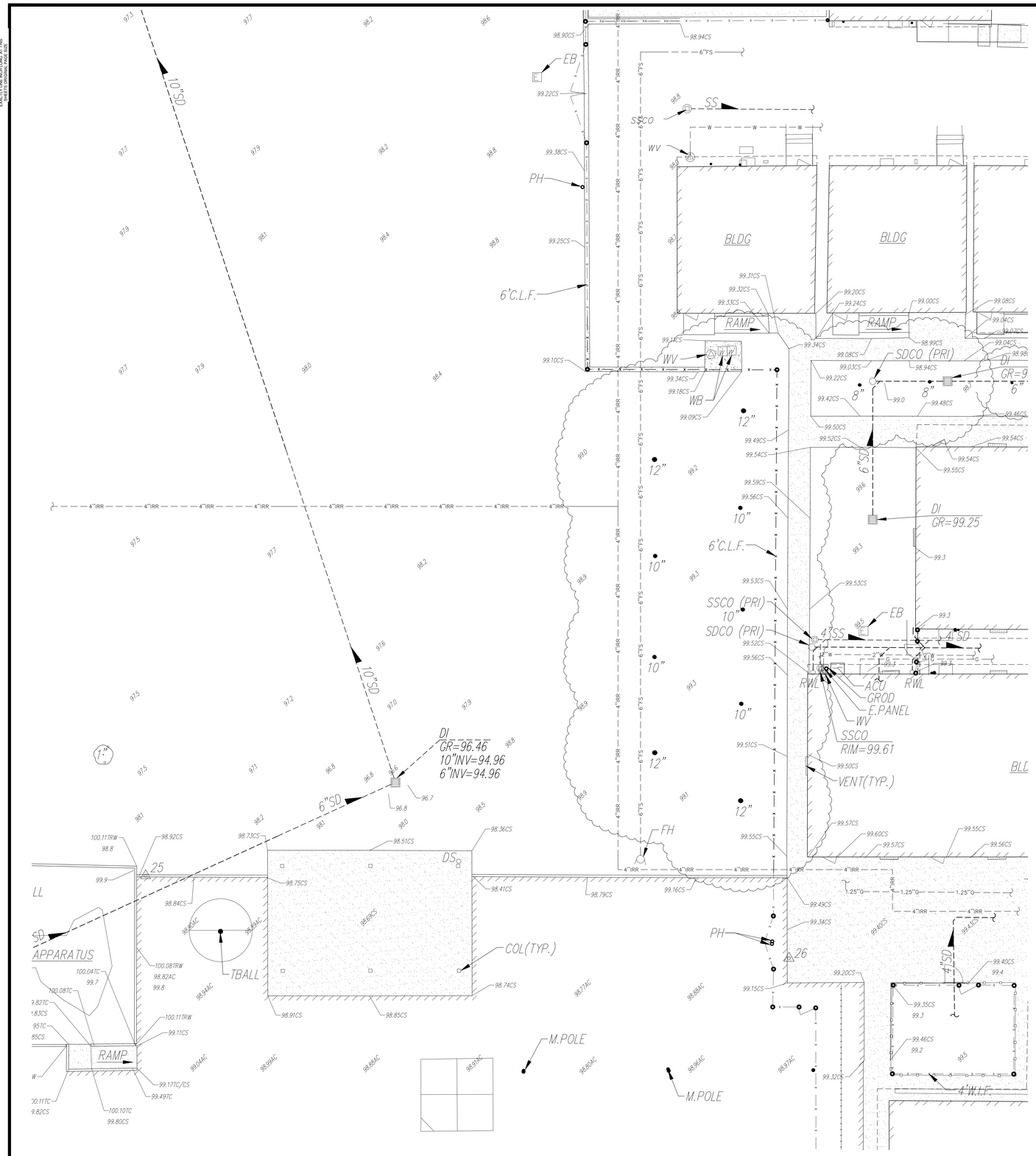
C0.1

12/12/2023 4:58:53 PM

FILENAME: I:\26-039\CIVIL\DWG\26-039-C01.DWG

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EQUAL TO 1" WHEN PLOTTED ON ANSI SIZE E SHEETS ORIGINAL PAGE SIZE



EXISTING TOPOGRAPHY

- = PROPERTY LINE
- = CENTERLINE
- = EASEMENT
- = PROPERTY CORNER FOUND AS NOTED
- = PROPERTY CORNER NOTHING FOUND OR SET
- 123 = TEMPORARY BENCHMARK (SEE TBM LIST FOR INFO)
- = SWALE OR DRAINAGE FLOW
- = DRAINAGE FLOW
- = FENCE (TYPE NOTED)
- = TREE (SIZE/TYPE INDICATED)
- = SLOPE
- 100 = CONTOUR
- = CONCRETE SURFACE
- = EDGE OF ASPHALT
- = EDGE OF BUILDING
- = SIGN
- = POST OR BOLLARD
- 99.9 = GROUND ELEVATION
- 99.99 = HARD SURFACE ELEVATION

EXISTING UTILITIES

- 12"SD = STORM DRAIN LINE (SIZE & DIRECTION OF FLOW)
- 12"SD = STORM DRAIN LINE (RECORD INFORMATION)
- 12"SD = STORM DRAIN LINE (UNDERGROUND LOCATING)
- SD = STORM DRAIN MANHOLE
- = STORM DRAIN CLEANOUT
- = DROP INLET
- = AREA DRAIN
- RWL = RAIN WATER LEADER
- DS = DOWNSPOUT
- 12"SS = SANITARY SEWER LINE (SIZE & DIRECTION OF FLOW)
- 12"SS = SANITARY SEWER LINE (RECORD INFORMATION)
- 12"SS = SANITARY SEWER LINE (UNDERGROUND LOCATING)
- SS = SANITARY SEWER MANHOLE
- = SANITARY SEWER CLEANOUT
- W = WATER LINE (SIZE INDICATED)
- W = WATER LINE (RECORD INFORMATION)
- W = WATER LINE (UNDERGROUND LOCATING)
- W = WATER MANHOLE
- = WATER VALVE
- = WATER METER
- = WATER BOX
- = IRRIGATION CONTROL VALVE
- = FIRE HYDRANT
- = BACKFLOW PREVENTER
- = SPRINKLER
- = HOSE BIBB
- OH-E = OVERHEAD ELECTRIC LINE
- E = UNDERGROUND ELECTRIC LINE
- E = UNDERGROUND ELECTRIC LINE (RECORD INFORMATION)
- E = UNDERGROUND ELECTRIC LINE (UNDERGROUND LOCATING)
- E = ELECTRIC MANHOLE
- = UTILITY POLE (WITH GUY WIRE)
- = ELECTRIC METER
- = ELECTRIC BOX
- = STREET LIGHTING BOX
- OR = LIGHT STANDARD
- = SIGNAL LIGHT
- = FLOOD LIGHT
- = ELECTRICAL OUTLET
- G = GAS LINE (SIZE INDICATED)
- G = GAS LINE (RECORD INFORMATION)
- G = GAS LINE (UNDERGROUND LOCATING)
- G = GAS MANHOLE
- = GAS VALVE
- = GAS METER
- t = TELEPHONE LINE
- t = TELEPHONE LINE (RECORD INFORMATION)
- t = TELEPHONE LINE (UNDERGROUND LOCATING)
- = STORM DRAIN BOX
- = TRAFFIC SIGNAL BOX

ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED ON THESE PLANS.

AC	ASPHALTIC CONCRETE
ACC	ACCESSIBLE
ACU	AIR CONDITIONING UNIT
AD	AREA DRAIN
APN	ASSESSOR'S PARCEL NUMBER
ARV	AIR RELEASE VALVE
BBALL	BASKETBALL POLE
BCM	BRASS CAP MONUMENT
BFP	BACK FLOW PREVENTER
BL.	BLOCK
BLDG	BUILDING
BOL	BOLLARD
BOV	BLOW-OFF VALVE
BR.	BRICK
BWF	BARBED WIRE FENCE
C	COMMUNICATION
CATV	CABLE TELEVISION
CIP	CAPPED IRON PIPE
C/L	CENTERLINE
C.L.F.	CHAIN LINK FENCE
CO	CLEANOUT
COL	COLUMN
CONC.	CONCRETE
COND.	CONDENSATE
CPF	CONTROL POINT FOUND
CPS	CONTROL POINT SET
CS	CONCRETE SURFACE
DF	DRINKING FOUNTAIN
DG	DECOMPOSED GRANITE
DI	DROP INLET
DRWY	DRIVEWAY
DS	DOWNSPOUT
DWG	DRAWING
E	ELECTRIC
EP	EDGE OF PAVEMENT
ESMT	EASEMENT
FA	FIRE ALARM
FDC	FIRE DEPARTMENT CONNECTION
FFE	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FL	FLOWLINE
FO	FIBER OPTIC
FS	FIRE SERVICE
G	GAS
GB	GRADE BREAK
GD	GARAGE DOOR
GR	GRATE
GRB	GROUND ROD BOX
GROD	GROUND ROD
GST	GATE STOP
GV	GAS VALVE
HB	HOSE BIBB
HBB	HOSE BIBB BOX
HBD	HEADER BOARD
HP	HIGH PRESSURE
HR	HANDRAIL
HVE	HIGH VOLTAGE ELECTRIC
IC	IN CONCRETE
ICP	IRRIGATION CONTROL PANEL
ICV	IRRIGATION CONTROL VALVE
INV	PIPE INVERT ELEVATION
IRR	IRRIGATION
JP	JOINT UTILITY POLE
JT	JOINT TRENCH
LNDG	LANDING
LVE	LOW VOLTAGE ELECTRIC
M.	METAL
MH	MANHOLE
MS	MOW STRIP
MSC	METAL STORAGE CONTAINER
NTS	NOT TO SCALE
OH	OVERHEAD
OHANG	OVERHANG
OIP	OPEN IRON PIPE
P/L	PROPERTY LINE
PA	PLANTER AREA
PB	PARKING BUMPER
PH	POSTHOLE
PIV	POST INDICATOR VALVE
PP	POWER POLE
PRI	PER RECORD INFORMATION
PUE	PUBLIC UTILITY EASEMENT
PV	PAVERS
PVC	POLYVINYL CHLORIDE
R	RUBBER
RG	ROLLING GATE
RIM	MANHOLE RIM ELEVATION
ROW	RIGHT OF WAY
RW	RETAINING WALL
RWD	REDWOOD
RWL	RAIN WATER LEADER
SB	SIGNAL BOX
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SIG	SIGNAL
SL	STREET LIGHT
SLB	STREET LIGHT BOX
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
STL.	STEEL
T	TELEPHONE
TBALL	TETHER BALL POLE
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TD	TRENCH DRAIN
TP	TELEPHONE POLE
TRW	TOP OF RETAINING WALL
UG	UNDERGROUND
UNK	UNKNOWN
V	VENT
VBALL	VOLLEYBALL
W	WATER
W/	WITH
WD.	WOOD
WF	WOOD FENCE
W.I.F.	WROUGHT IRON FENCE
W.R.F.	WOOD RAIL FENCE
XF	TRANSFORMER
XWALK	CROSSWALK
YD	YARD DRAIN

BASIS OF BEARINGS:
46 MAPS 5

B+B NOTES:
UTILITY LOCATIONS MAY NOT BE TO SCALE
NOT ALL UTILITIES MAY BE SHOWN.
SOME LATERALS WERE NOT ACCESSIBLE & WERE THEREFORE NOT LOCATED.
DEPTHS SHOWN ARE TO CENTER OF CONDUCTIVE UTILITY & ARE GENERALLY +/-10% OF ACTUAL DEPTH, WHEN NOT DISTORTED BY ADJACENT CONDUCTORS.
CRITICAL DEPTHS REQUIRE VERIFICATION BY POTHOLING.

NOTE:
EXISTING UTILITIES BASED ON VISIBLE SURFACE STRUCTURES AND UG LOCATING BY B+B.

TBM LIST

NUMBER	DESCRIPTION	NORTHING	EASTING	ELEVATION
10	CPS MAG NAIL	5000.00	5000.00	100.00
13	CPS CHISELED "+"	5209.01	5173.23	99.47
14	CPS CHISELED "+"	5388.60	5085.30	95.58
15	CPS CHISELED "+"	5053.94	5010.38	99.28
16	CPS MAG NAIL	4989.43	4909.29	101.02
19	CPS CHISELED "+"	5299.55	5027.51	99.38
22	CPS CHISELED "+"	5201.69	5010.92	99.33
23	CPS CHISELED "+"	5334.55	5030.63	99.15
24	CPS CHISELED "+"	5121.95	5101.52	99.51
25	CPS CHISELED "+"	5218.85	4768.91	98.91
26	CPS CHISELED "+"	5200.58	4911.40	99.25

BASIS OF BEARINGS:
ASSUMED

F.E.M.A. INFORMATION:
THE SUBJECT PROPERTY IS LOCATED IN "ZONE X--AREA OF MINIMAL FLOOD HAZARD" PER FLOOD INSURANCE RATE MAP 06067C0205H DATED AUGUST 16, 2012.

NOTE:
EXISTING UTILITIES BASED ON VISIBLE SURFACE STRUCTURES AND RECORD INFORMATION.

GRAPHIC SCALE
10' 0 5' 10' 20'
(IN FEET) 1 inch = 10 feet
NORTH
THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

AGENCY APPROVAL:

Sacramento City Unified School District

HMC Architects
DESIGN FOR GOOD
3186-077-000
2101 CAPITOL AVENUE, SUITE 100,
SACRAMENTO, CA, 95816
916 368 7990 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER
ANTHONY J. TASSANO
NO. C74696
STATE OF CALIFORNIA

WCE
WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

FACILITY:
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
TOPOGRAPHIC SURVEY

CONSTRUCTION DOCUMENTS

DATE: 2026.03.04
CLIENT PROJ NO: -
SHEET:

C0.2

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FILENAME: I:\26-039\CIVIL\DWG\26-039-C02.DWG

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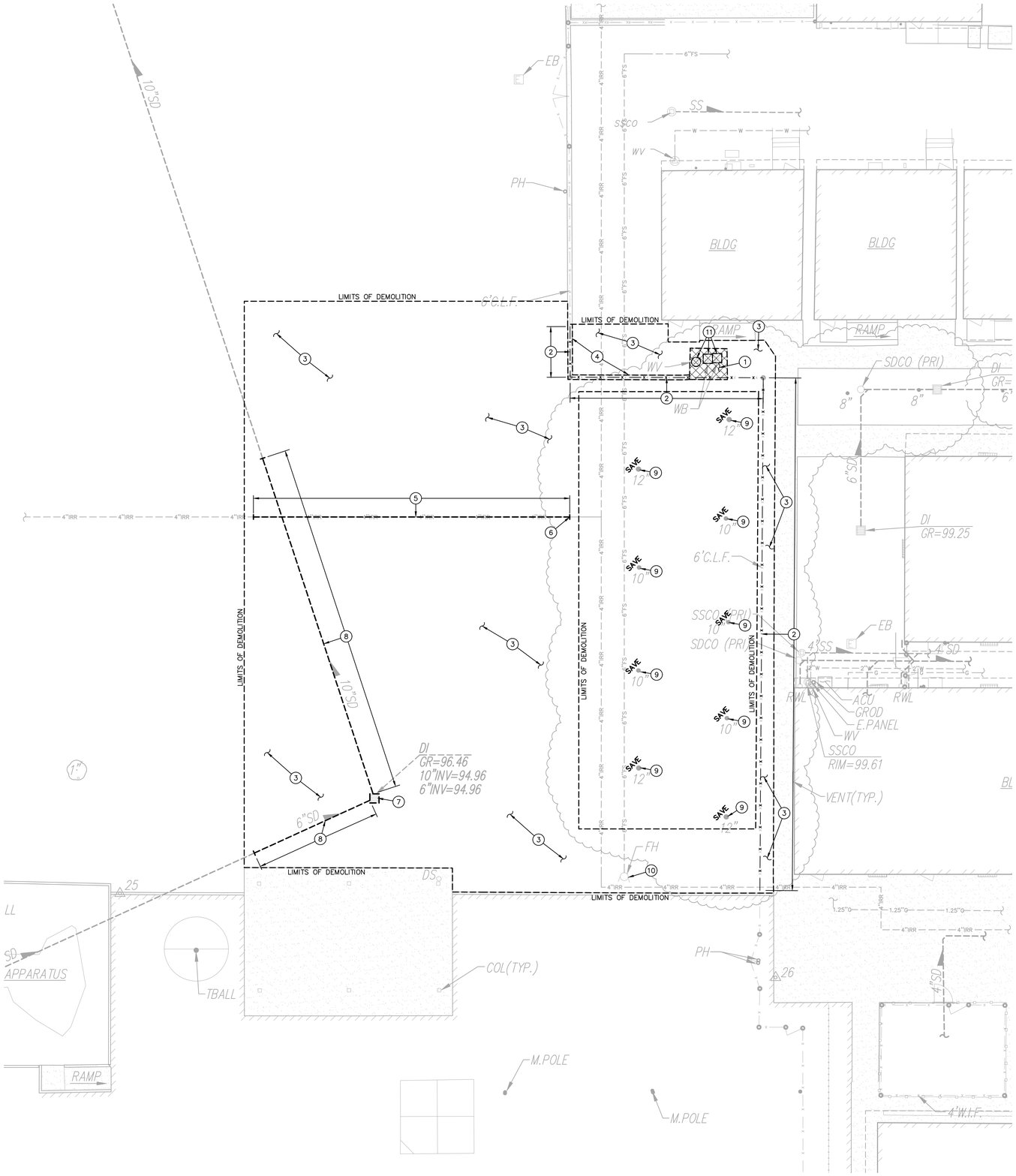

DEMOLITION NOTES

1. SAWCUT, REMOVE AND DISPOSE OF EXISTING CONCRETE PAVING AND ASSOCIATED AGGREGATE BASE. SAWCUT SHALL BE A NEAT STRAIGHT LINE, MAINTAIN CLEAN, STRAIGHT CUT EDGE UNTIL NEW PAVING IS PLACED.
2. REMOVE AND SALVAGE EXISTING FENCE MESH AND RAILS FOR REINSTALLATION. REMOVE AND DISPOSE OF EXISTING FENCE POSTS AND ASSOCIATED FOOTINGS.
3. SEE ARCHITECTURAL PLANS FOR REQUIRED TURF/VEGETATION AND IRRIGATION DEMOLITION.
4. REMOVE AND DISPOSE OF EXISTING CONCRETE BAND TO EXTENT SHOWN.
5. REMOVE AND DISPOSE OF EXISTING IRRIGATION MAIN TO EXTENT SHOWN.
6. CAP END OF PIPE.
7. REMOVE AND DISPOSE OF EXISTING DROP INLET.
8. REMOVE AND DISPOSE OF EXISTING STORM DRAIN PIPE TO EXTENT SHOWN.
9. EXISTING TREE TO REMAIN.
10. EXISTING FIRE HYDRANT TO REMAIN.
11. EXISTING UTILITY BOX TO REMAIN.

GRAPHIC SCALE

10' 0 5' 10' 20'

(IN FEET) 1 inch = 10 feet

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PROJECT:

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SHEET NAME:

DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

DATE: 2026.03.04

CLIENT PROJ NO: -

SHEET:

C1.1

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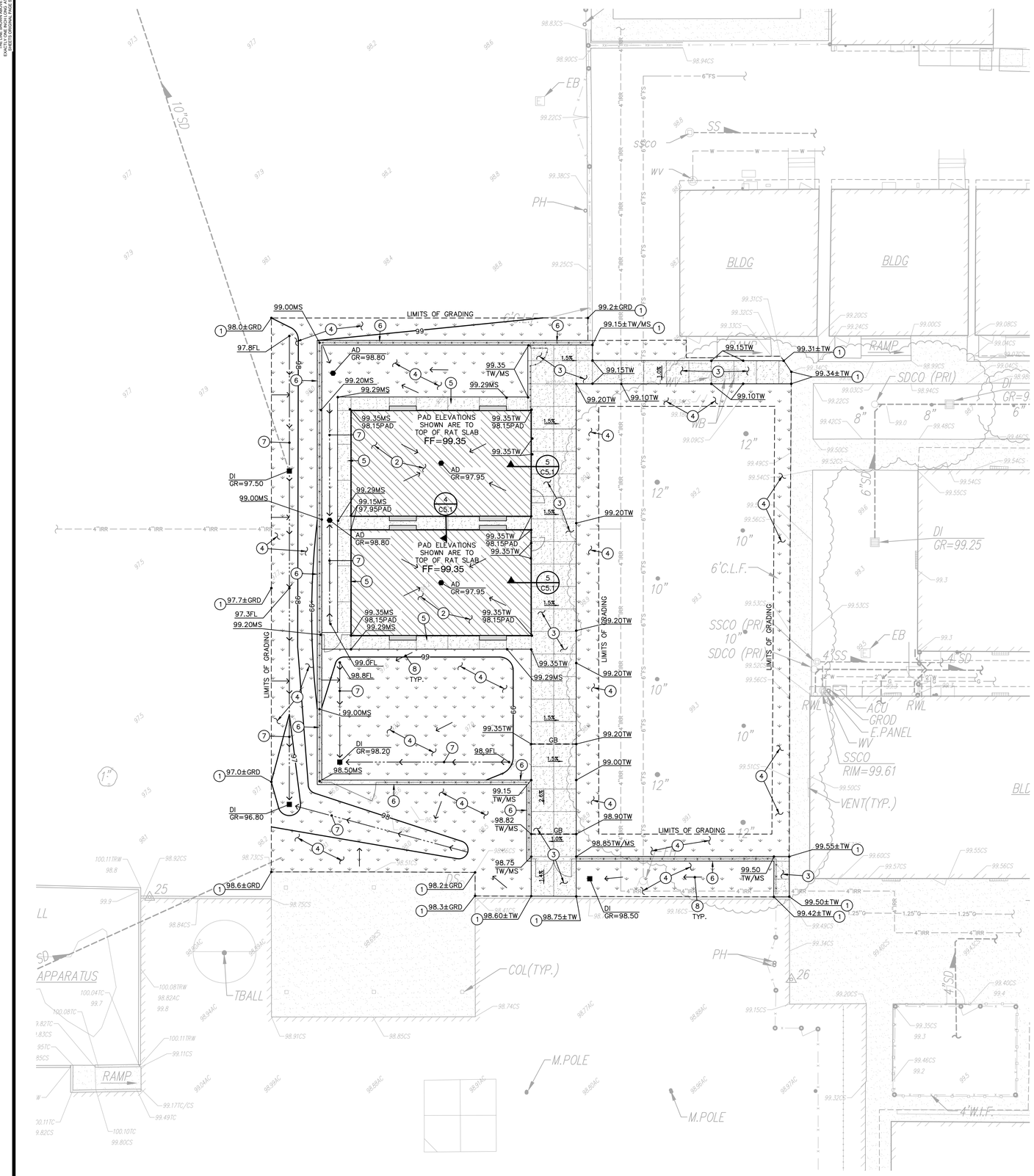

SUBGRADE PREPARATION

FOLLOWING SITE DEMOLITION ACTIVITIES,

EXCAVATE DOWN TO ROUGH SUBGRADE ELEVATION, SCARIFY THE EXISTING SOILS TO A MINIMUM DEPTH OF 12 INCHES AND UNIFORMLY MOISTURE CONDITION TO AT LEAST 2 PERCENT ABOVE THE OPTIMUM MOISTURE CONTENT AND COMPACT TO AT LEAST 90 PERCENT OF THE MAXIMUM DRY DENSITY PER ASTM D1557.

GRADING AND PAVING NOTES

1. MATCH EXISTING GRADE/ELEVATION.
2. PLACE A 2" THICK 3-SACK CONCRETE SLURRY RAT SLAB OVER 12" CLASS II AB ON SUBGRADE COMPACTED PER PROJECT SPECIFICATIONS.
3. CONSTRUCT CONCRETE SIDEWALK PER (1/C5.1) PLACE 5"PCC WITH #4 REBAR AT 24"O.C.E.W. OVER 12" CL2 AGGREGATE BASE ON COMPACTED SUBGRADE.
4. SEE ARCHITECTURAL PLANS FOR REQUIRED IMPROVEMENTS TO LANDSCAPE/IRRIGATION.
5. CONSTRUCT 36" WIDE CONCRETE BAND AT BUILDING PER (2/C5.1)
6. CONSTRUCT 12" WIDE CONCRETE BAND PER (3/C5.1)
7. CONSTRUCT SWALE.
8. GRADE UNIFORMLY TO SWALE AND/OR INLET.

GRAPHIC SCALE

10' 0 5' 10' 20'

(IN FEET) 1 inch = 10 feet

NORTH

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FACILITY:

3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

GRADING AND PAVING PLAN

CONSTRUCTION DOCUMENTS

DATE: 2026.03.04

CLIENT PROJ NO: -

SHEET:

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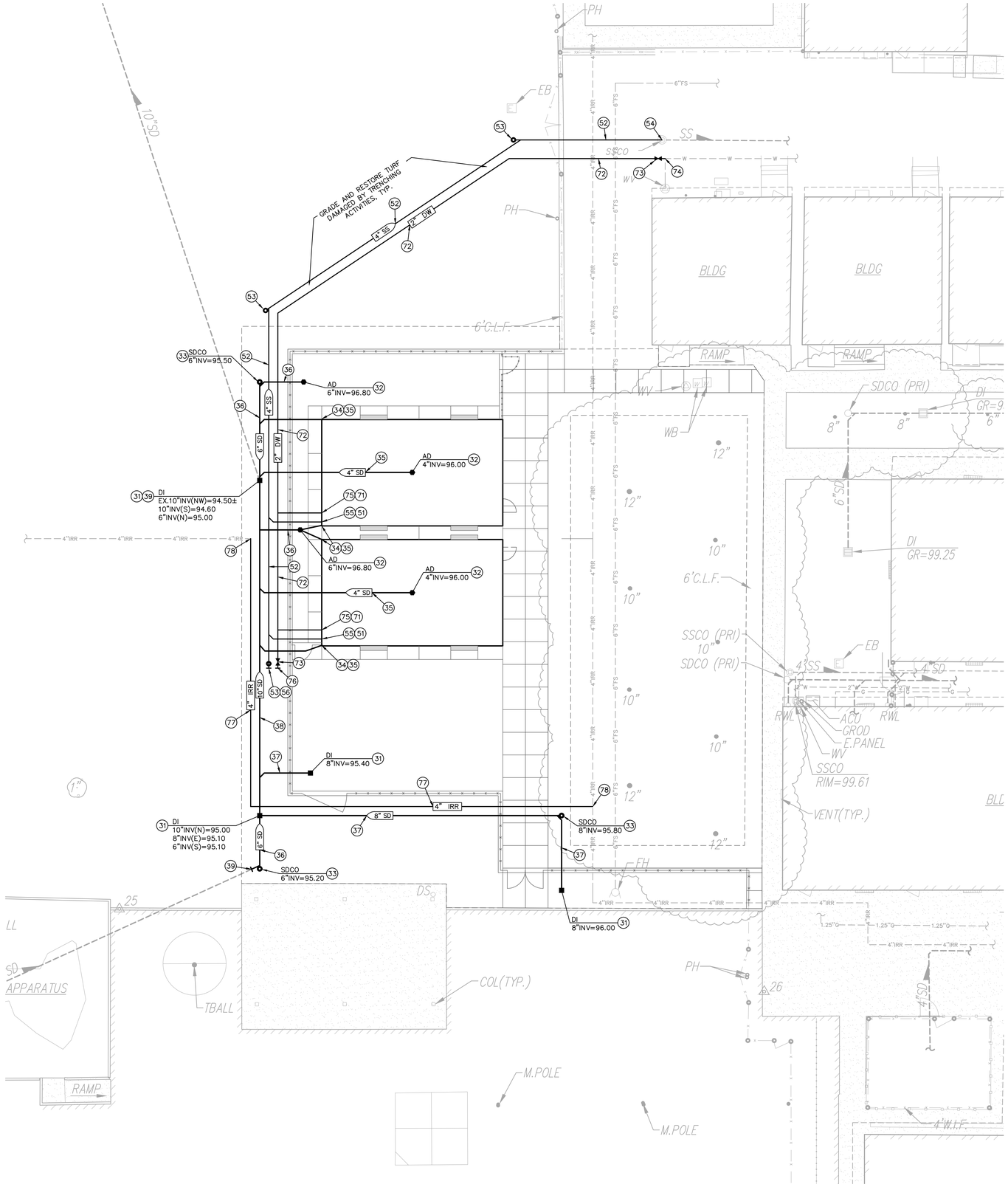

DRAINAGE NOTES

31. CONSTRUCT DROP INLET PER (6 / C5.1)
32. CONSTRUCT AREA DRAIN PER (7 / C5.1)
33. CONSTRUCT STORM DRAIN CLEANOUT PER (8 / C5.1)
34. PROVIDE DOWNSPOUT CONNECTION PER (12 / C5.1)
35. PLACE 4" STORM DRAIN PER (9 / C5.1)
36. PLACE 6" STORM DRAIN PER
37. PLACE 8" STORM DRAIN PER
38. PLACE 10" STORM DRAIN PER
39. CONNECT TO EXISTING STORM DRAIN. FIELD VERIFY EXACT DEPTH, LOCATION AND CONDITION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

SEWER NOTES

51. PLACE 2" SEWER PER (9 / C5.1)
52. PLACE 4" SEWER PER
53. CONSTRUCT SEWER CLEANOUT PER (8 / C5.1)
54. CONNECT TO EXISTING SEWER. FIELD VERIFY EXACT DEPTH, AND LOCATION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.
55. CONNECT TO BUILDING SEWER SERVICE. COORDINATE EXACT LOCATION AND DEPTH AT BUILDING PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.
56. CAP END FOR FUTURE CONNECTION.

WATER NOTES

71. PLACE 1" DOMESTIC WATER PER (10 / C5.1)
72. PLACE 2" DOMESTIC WATER PER
73. PLACE GATE VALVE AND VALVE BOX. SIZE TO MATCH LINE SIZE. (11 / C5.1)
74. CONNECT TO EXISTING DOMESTIC WATER PIPE. FIELD VERIFY EXACT DEPTH, LOCATION AND CONDITION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.
75. CONNECT TO BUILDING DOMESTIC WATER SERVICE. COORDINATE EXACT LOCATION AND DEPTH AT BUILDING PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.
76. CAP END FOR FUTURE CONNECTION.
77. PLACE 4" IRIGATION PIPE PER (10 / C5.1)
78. CONNECT TO EXISTING IRRIGATION PIPE. FIELD VERIFY EXACT DEPTH, LOCATION AND CONDITION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

GRAPHIC SCALE

10' 0 5' 10' 20'

(IN FEET) 1 inch = 10 feet

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FACILITY:

3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

UTILITY PLAN

CONSTRUCTION DOCUMENTS

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SHEET:

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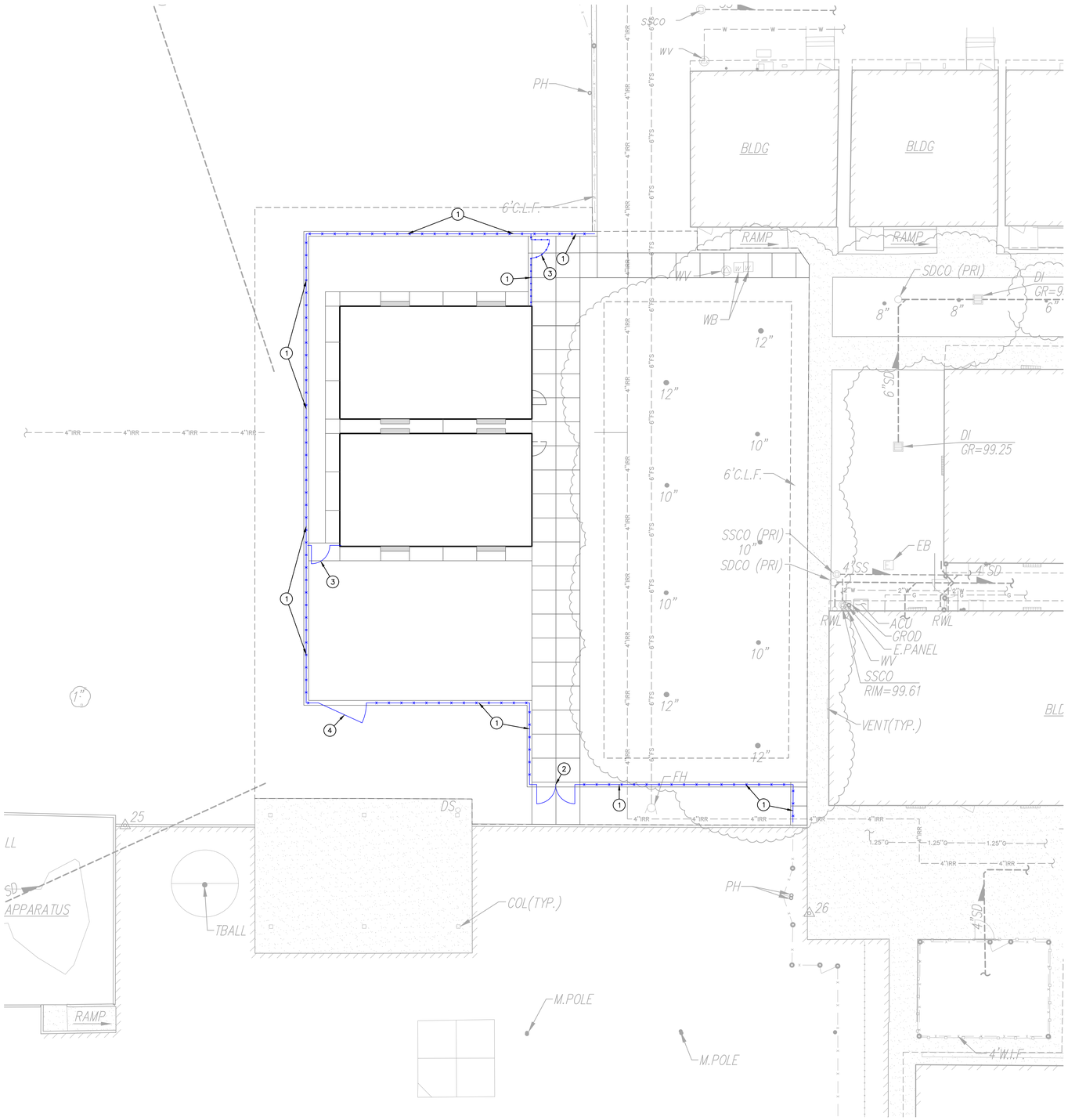

FENCING NOTES

1. PLACE 6 FT BLACK VINYL CHAIN LINK FENCE AND POSTS. POSTS AND RAILS TO BE POWDER COATED BLACK. FABRIC TO BE 9 GA. 2" MESH SEE SPECIFICATION SECTION 323113 AND DETAIL PROVIDED. (3 / C5.2)
2. CONSTRUCT ACCESSIBLE TWO-LEAF (40" WIDE LEAFS) ORNAMENTAL GATE PER SEE SPECIFICATION SECTION 323119. (1 / C5.2)
3. CONSTRUCT 4FT WIDE, SINGLE LEAF, CHAIN LINK MAINTENANCE GATE PER (4 / C5.2)
4. CONSTRUCT 10FT WIDE, SINGLE LEAF, CHAIN LINK MAINTENANCE GATE PER (4 / C5.2)

GRAPHIC SCALE

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3324 GLENMOOR DRIVE
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PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

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FENCING PLAN

CONSTRUCTION DOCUMENTS

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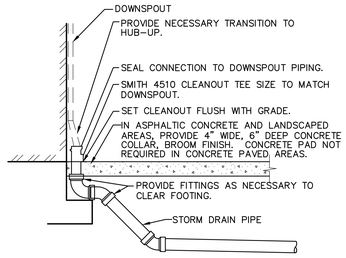

12 C5.1 DOWNSPOUT CONNECTION
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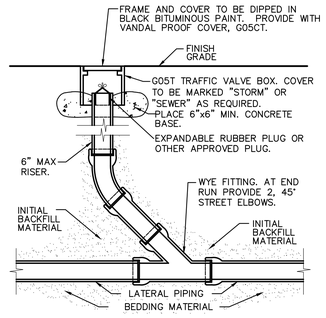
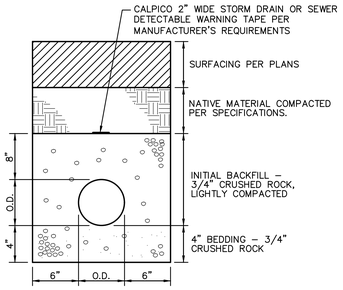
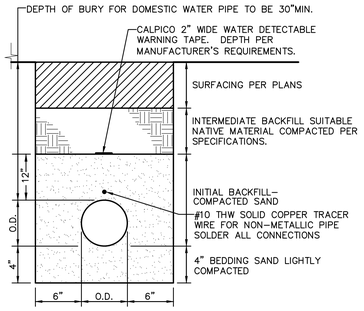


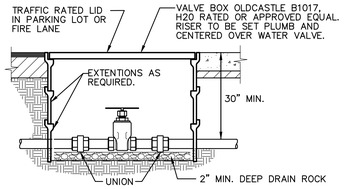
8 C5.1 CLEANOUT
NO SCALE



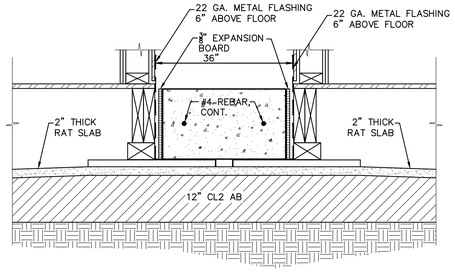
9 C5.1 STORM DRAIN AND SEWER TRENCH
NO SCALE



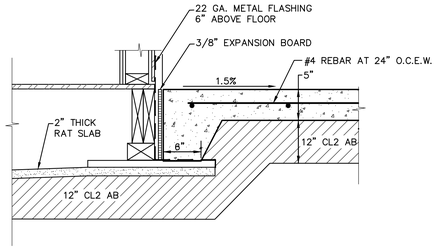
10 C5.1 WATER TRENCH
NO SCALE



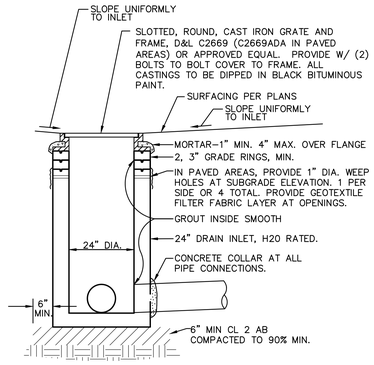
11 C5.1 WATER VALVE
1/2" TO 3" PIPE
NO SCALE



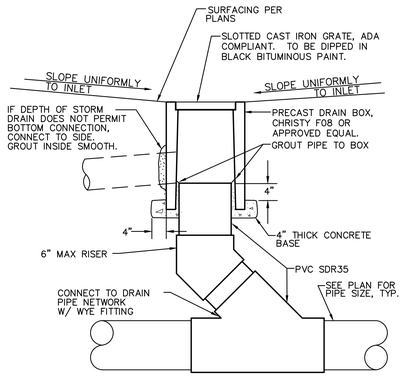
4 C5.1 CONCRETE BAND
NO SCALE



5 C5.1 SECTION–EDGE OF WALK AT BLDG.
NO SCALE



6 C5.1 DROP INLET
NO SCALE



7 C5.1 AREA DRAIN
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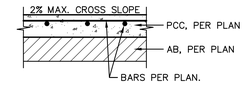
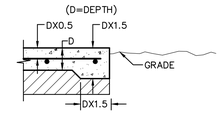
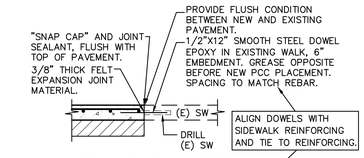


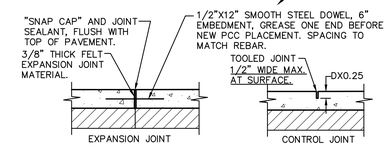
TYPICAL SECTION



TYPICAL THICKENED EDGE



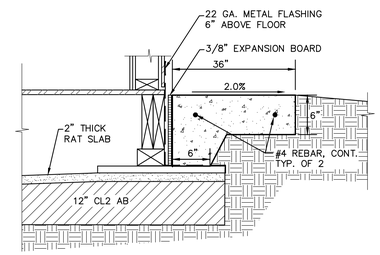
CONNECTION TO (E) CONCRETE



TYPICAL JOINTS

NOTES:
1. PROVIDE FELT EXPANSION JOINTS AT 20 FEET O.C. MAX. SEE PLAN FOR LAYOUT.
2. PROVIDE CONTROL JOINTS AT 10 FEET O.C. MAX. SEE PLAN FOR LAYOUT.
3. EXPANSION OR CONTROL JOINTS SHALL NOT EXCEED 1/2" IN SURFACE WIDTH.

1 C5.1 CONCRETE SIDEWALK
NO SCALE



2 C5.1 36" CONCRETE BAND
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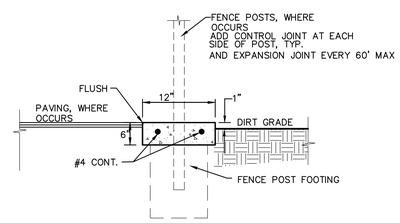

3 C5.1 12" WIDE CONCRETE BAND
NO SCALE

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FACILITY:
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PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
DETAILS AND SECTIONS

CONSTRUCTION DOCUMENTS

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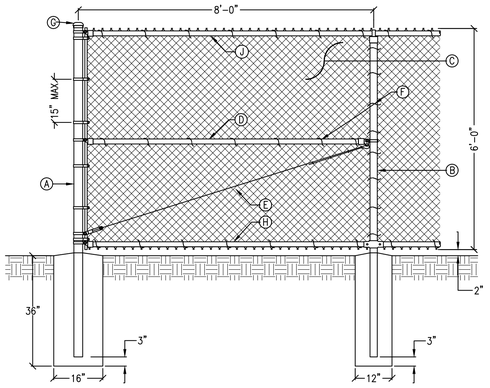
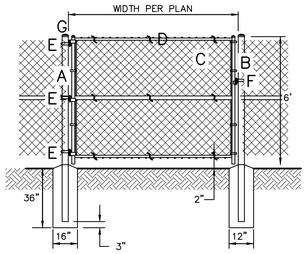


(A) – 2-7/8" OD SCH. 40 GALV. STEEL POST, POWDER COATED BLACK PER PLAN.
(B) – 2-3/8" OD SCH. 40 GALV. STEEL POST, POWDER COATED BLACK PER PLAN.
(C) – 9 GA. CHAIN LINK FENCE. BLACK VINYL.
(D) – 1-5/8" OD SCH. 40 GALV. STEEL RAIL, POWDER COATED BLACK PER PLAN WHERE REQ/D. AT TERMINAL AND CORNER POSTS.
(E) – 3/8" OD ADJUSTABLE INDUSTRIAL GALV. TRUSS ROD WITH TRUSS ROD TIGHTENER. 18" MINIMUM TAIL AND SECURE WITH 9 GA. GALV. STEEL, BLACK VINYL COATED HOG RINGS..
(F) – 9 GA. GALV. STEEL, BLACK VINYL COATED OR GALV., TO MATCH FENCING. TIES AT 15" MAX. OC HORIZONAL AND 12" MAX. VERTICAL CLOSED EYE ENDS.
(G) – ALL CAPS AND FITTINGS HEAVY INDUSTRIAL GALV. GRADE. POWDER COATED BLACK PER PLAN.
(H) – 1-5/8" OD SCH. 40 GALV. STEEL BOTTOM RAIL. POWDER COATED BLACK PER PLAN.
(J) – 1-5/8" OD SCH. 40 GALV. STEEL TOP RAIL, POWDER COATED BLACK PER PLAN.

3 / C5.2 6' TALL CHAIN LINK FENCING

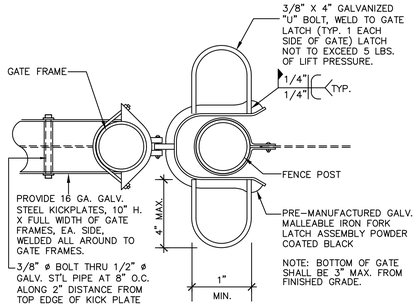
NO SCALE



A – 4" OD SCH. 40 GALV. STEEL POST, POWDER COATED BLACK.
B – 2 7/8" OD SCH. 40 GALV. STEEL POST, POWDER COATED BLACK.
C – FABRIC TO MATCH FENCE. BLACK VINYL COATED.
D – 1 5/8" OD SCH. 40 WELDED GALV. STEEL FRAME, POWDER COATED BLACK.
E – 180 DEGREE PRESSED STEEL INDUSTRIAL HINGE.
F – MALLEABLE IRON (LOCKABLE) GATE FORK LATCH, SEE 5/C5.2.
G – ALL CAPS AND FITTINGS HEAVY INDUSTRIAL GALV. GRADE, POWDER COATED BLACK.

4 / C5.2 CHAIN LINK MAINTENANCE GATE

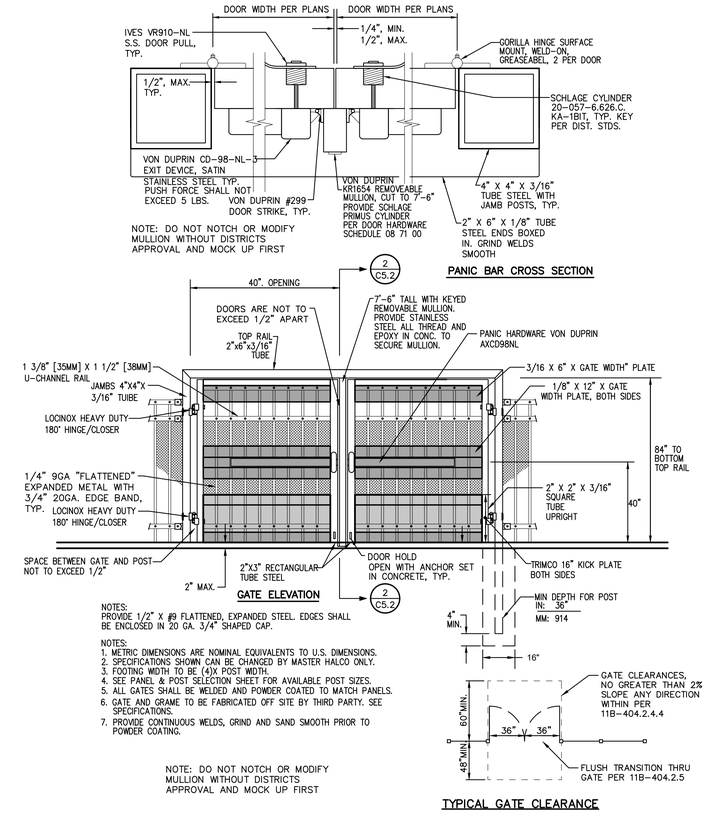
NO SCALE



MOUNT LATCH PADDLE BETWEEN 30" – 44" A.F.F.

5 / C5.2 GATE LATCH

NO SCALE



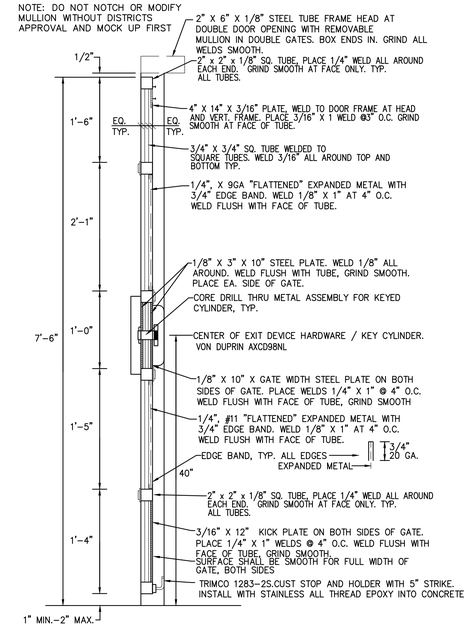
NOTES:
PROVIDE 1/2" X #9 FLATTENED, EXPANDED STEEL. EDGES SHALL BE ENCLOSED IN 20 GA. 3/4" SHAPED CAP.

NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS.
2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MASTER HALCO ONLY.
3. FOOTING WIDTH TO BE (4)X POST WIDTH.
4. SEE PANEL & POST SELECTION SHEET FOR AVAILABLE POST SIZES.
5. ALL GATES SHALL BE WELDED AND POWDER COATED TO MATCH PANELS.
6. GATE AND GRAME TO BE FABRICATED OFF SITE BY THIRD PARTY. SEE SPECIFICATIONS.
7. PROVIDE CONTINUOUS WELDS, GRIND AND SAND SMOOTH PRIOR TO POWDER COATING.

NOTE: DO NOT NOTCH OR MODIFY MULLION WITHOUT DISTRICTS APPROVAL AND MOCK UP FIRST

1 / C5.2 TYPICAL ORNAMENTAL ACCESSIBLE GATE – DOUBLE

NO SCALE



2 / C5.2 SECTION; FABRICATED METAL DOOR

NO SCALE

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WCE
WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

FACILITY:
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
DETAILS AND SECTIONS

CONSTRUCTION DOCUMENTS

DATE: 2026.03.04
CLIENT PROJ NO: -

SHEET:
C5.2

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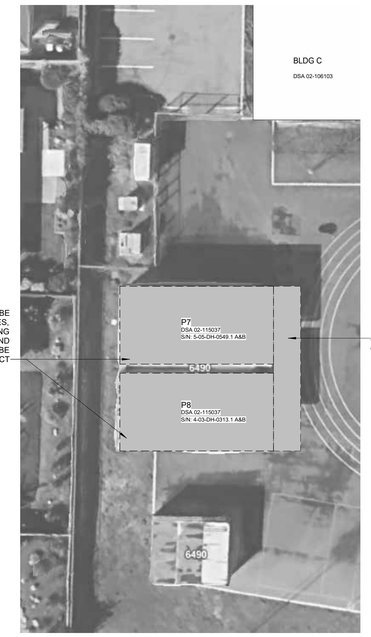
PN

SITE DEMOLITION PLAN - GENEVIEVE DIDION **1** NTS



PN

SITE DEMOLITION PLAN - GENEVIEVE DIDION - ENLARGED **3** NTS

LEGEND

- EXISTING PORTABLES TO BE RELOCATED
- EXISTING BUILDINGS

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(E) BUILDING P7

S/N: 5-05-DH-0549.1 A&B

(E) BUILDING P8

S/N: 4-03-DH-0313.1 A&B

EXISTING IMAGES **2** 1" = 1'-0"

NOTES

1. ALL (E) UTILITIES TO BE TERMINATED AND CAPPED FOR FUTURE RECONNECTIONS.
2. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DEMO DRAWINGS FOR SCOPE OF FIBER & UTILITY CONNECTIONS
3. CONTRACTOR IS RESPONSIBLE FOR REPAIR/REPLACEMENT OF ALL HARDSCAPE/PLANTING FOR CONNECTION OF UNDERGROUND UTILITIES

FACILITY:

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3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

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SITE DEMOLITION PLAN - GENEVIEVE DIDION

DD SET

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SHEET:

A1.01

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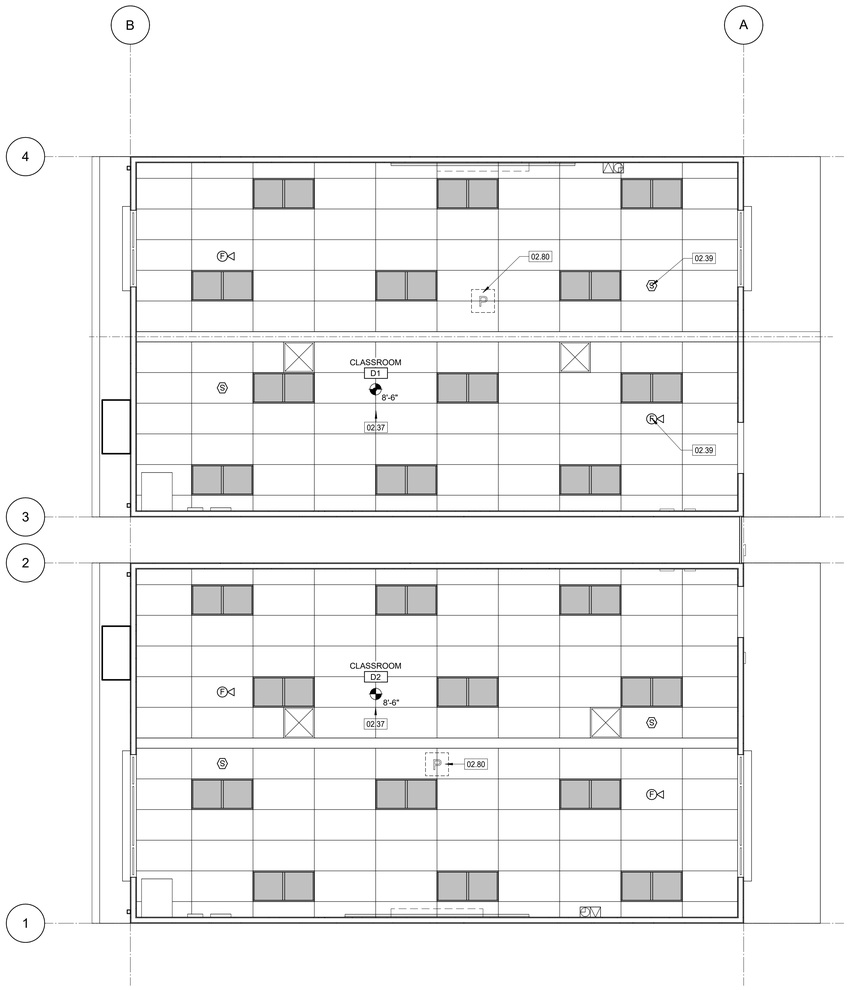
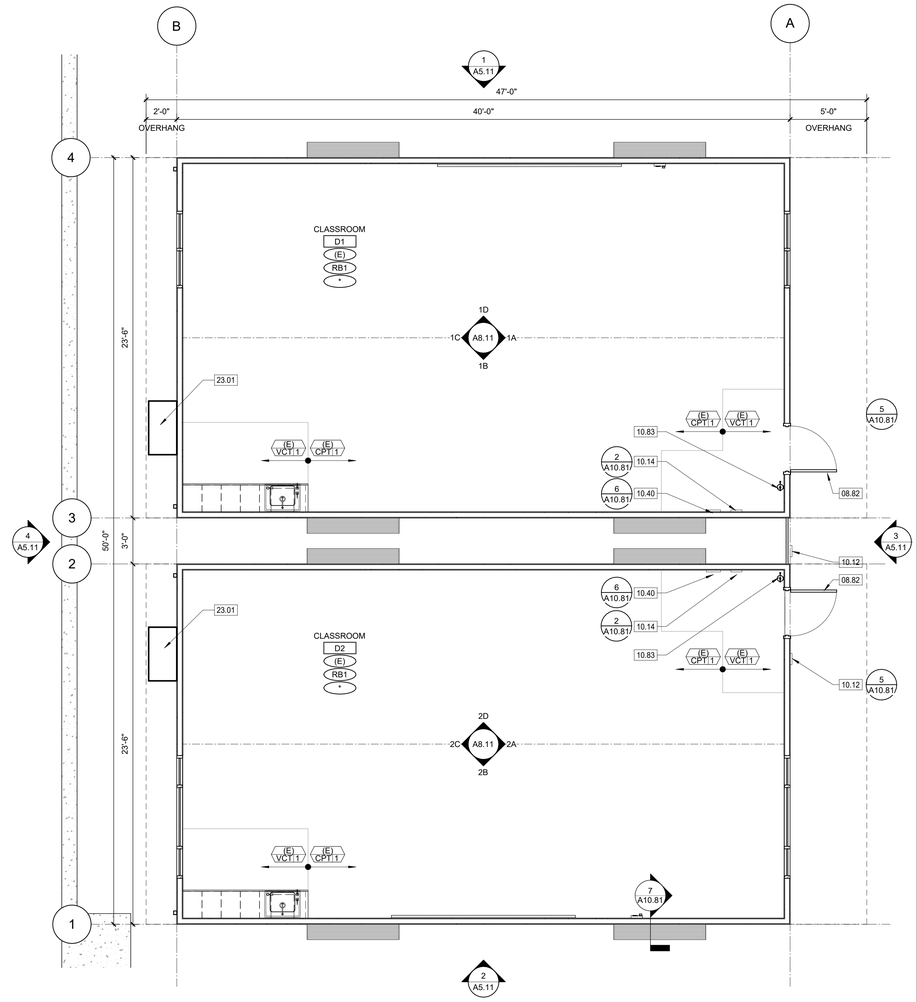


1ST FLOOR - RCP 3

1/4" = 1'-0"



FLOOR PLAN 1

1/4" = 1'-0"

LEGEND

ROOF OVERHANG

MODULAR INTERSECTION

FINISH TAG

NAME — ROOM NAME — ROOM NUMBER — WALL FINISH - SEE FINISH SCHEDULE, * = MULTIPLE FINISHES, SEE INT ELEVATION — BASE FINISH — FLOOR FINISH - SEE FINISH SCHEDULE, * = MULTIPLE FINISHES, SEE INT ELEVATION

FLOOR INTERIOR FINISHES

SUBSTRATE

MATERIAL TYPE - SEE FINISH SCHEDULE

UNDER FLOOR VENT, RECESSED

10'-0" HEIGHT ABOVE LEVEL (NOT FINISH FLOOR)

RETURN AIR GRILLE (DIAGONAL HATCH- SYMBOL SHAPES WILL VARY)

SUPPLY AIR GRILLE (CROSSHATCH- SYMBOL SHAPES WILL VARY)

LIGHT FIXTURE (SHADED- SYMBOL SHAPES WILL VARY)

24"x48" ACOUSTIC TILE CEILING SYSTEM- REF: CEILING TAGS AND SPECIFICATIONS

UNDERFLOOR VENTILATION CALCULATION

NUMBER OF MODULES:	4
EFFECTIVE NET AIR FLOW AREA REQUIRED:	12.8 SF
EFFECTIVE NET AIR FLOW AREA PROVIDED:	48 SF

KEYNOTES

02.37	(E) CEILING TO REMAIN; REPLACE ACOUSTICAL CEILING PANELS AS REQUIRED
02.39	(E) FIRE EXTINGUISHER TO REMAIN; PROTECT IN PLACE
02.80	REMOVE AND RELOCATE (E) EQUIPMENT | REMODEL PLAN
08.82	CONTRACTOR TO VERIFY EXISTING HARDWARE TO MATCH OR EQUAL TO, LOCKSET XXXX
10.12	TACTILE ROOM ID SIGN, DESIGN AND COLOR TO MATCH (E) CAMPUS SIGNAGE
10.14	ASSISTIVE LISTENING DEVICE SIGN
10.40	PRINT AND PINUP EGRESS MAP FROM REFERENCED DETAIL @ DISTRICT REQUEST. CONFIRM LOCATION WITH DISTRICT REPRESENTATIVE
10.83	REMOVE AND REPLACE (E) SURFACE MOUNTED FIRE EXTINGUISHER; HOWEVER, (E) TO REMAIN (AND ISSUE CREDIT TO OWNER DURING CONSTRUCTION), IF CONFIRMED (E) ACCESSORY HAS NOT EXPIRED
23.01	(E) HVAC UNIT, PROVIDE CONDENSATE DRAIN PVC PIPING TO DRYWELL

NOTES

1. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS.
2. REFER TO G-SERIES SHEETS FOR ADDITIONAL INFO AND CODE REQUIREMENTS.
3. SEE RESPONSIBILITY MATRIX.
4. PORTABLES TO BE PROVIDED COMPLETELY SEALED AND WATER TIGHT AT MODULAR INTERSECTION.
5. ELEMENTS IDENTIFIED IN DRAWINGS TAKE PRECEDENCE IN THE EVENT OF DISCREPENCIES BETWEEN DRAWINGS AND SPECIFICATIONS.
6. REPLACE IN KIND ALL EXISTING LAWN (SOD) AREAS DISTURBED BY WORK, VIF PRIOR TO BID.
7. REPLACE AND/OR RECONFIGURE ALL EXISTING IRRIGATION DISTURBED BY WORK, INCLUDING PROGRAMMING, ETC., FOR A COMPLETE AND FUNCTIONING SYSTEM, VIF PRIOR TO BID. SPRINKLER OVERSPRAY NOT ALLOWED ON WALKWAYS, BUILDINGS, OR FENCES.

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3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
FLOOR PLANS & RCPS

DD SET

DATE: **xxxx.xx.xx** | CLIENT PROJ NO:

SHEET:

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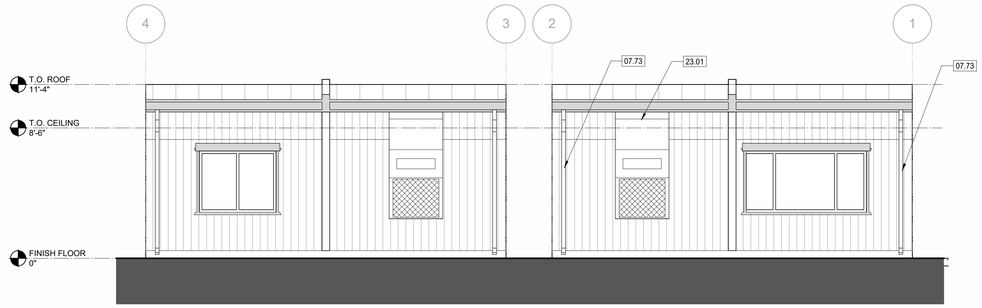
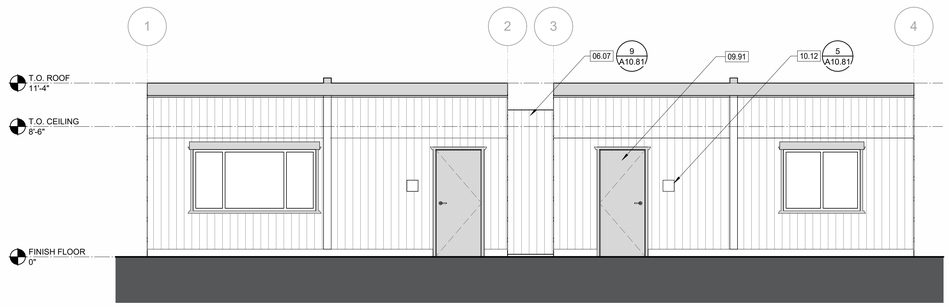
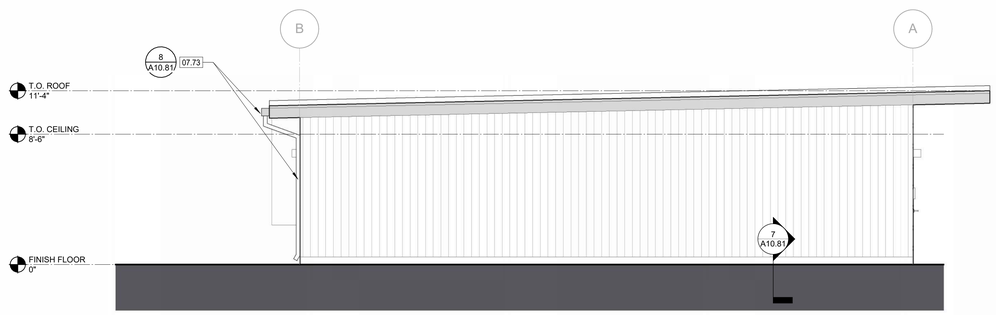


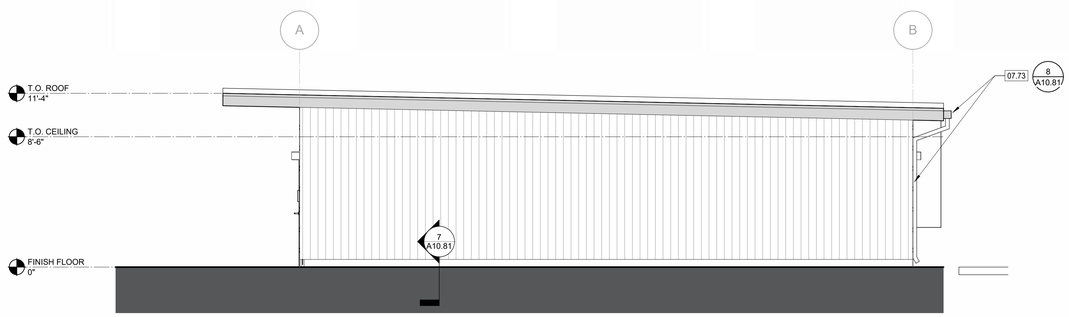
ELEVATION - EXTERIOR - WEST (REAR) **4**
1/4" = 1'-0"



ELEVATION - EXTERIOR - EAST (FRONT) **3**
1/4" = 1'-0"



ELEVATION - EXTERIOR - SOUTH **2**
1/4" = 1'-0"



ELEVATION - EXTERIOR - NORTH **1**
1/4" = 1'-0"

LEGEND

- (E) VERTICAL WOOD SIDING, PAINT TO MATCH CAMPUS/SITE COLORS
- (E) METAL ROOF
- (E) WOOD TRIM/SIDING, PAINT TO MATCH CAMPUS/SITE COLORS

EXTERIOR COLOR SCHEDULE

	MATERIAL	COLOR
W1	ALL TRIM/SIDING (UNO) INCLUDING ROOF FLASHING, RAKES, EAVES AND FASCIAS, SEE LEGEND	PAINT TO MATCH CAMPUS/SITE COLORS
W2	ALL TRIM (UNO), SEE LEGEND	PAINT TO MATCH CAMPUS/ SITE COLORS
M1	ALL DOWNSPOUTS	PAINT TO MATCH CAMPUS/ SITE COLORS
M2	ALL GUTTERS	PAINT TO MATCH CAMPUS/ SITE COLORS
D1	ALL DOORS INCLUDING DOOR FRAMES	PAINT TO MATCH CAMPUS/ SITE COLORS

KEYNOTES

06.07	WOOD SIDING WITH VERTICAL GROOVES, 3" ABOVE FINISH GRADE, PAINT TO MATCH ADJACENT EXTERIOR WALLS
07.73	REMOVE AND REPLACE (E) GUTTERS AND DOWNSPOUTS, TYP.
09.91	PAINT (E) DOOR FRAME, TO MATCH (E) CAMPUS, VIF PRIOR TO BID, TYP.
10.12	TACTILE ROOM ID SIGN, DESIGN AND COLOR TO MATCH (E) CAMPUS SIGNAGE
23.01	(E) HVAC UNIT, PROVIDE CONDENSATE DRAIN PVC PIPING TO DRYWELL

NOTES

1. NOT ALL EQUIPMENT, ACCESSORIES, DEVICES, ETC. ARE SHOWN FOR CLARITY, VIF PRIOR TO BID
2. PAINT ALL EXPOSED SURFACES INCLUDING EXTERIOR WALLS, SIDING, DOORS, FRAMES, TRIMS, FLASHING (INCLUDING ROOF FLASHING), GUTTERS, DOWNSPOUTS, CONDUIT, RACEWAYS, CONDENSATE PIPING, ACCESSORIES, ETC., EXCLUDING TRANSPARENT OR PRE-FINISHED OPENINGS, EQUIPMENT OR ACCESSORIES, UNO
3. SEE RESPONSIBILITY MATRIX
4. ELEMENTS IDENTIFIED IN DRAWINGS TAKE PRECEDENCE IN THE EVENT OF DISCREPENCIES BETWEEN DRAWINGS AND SPECIFICATIONS

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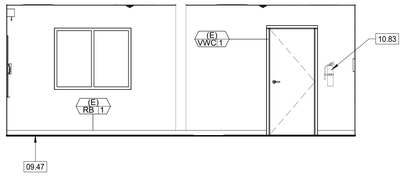
PAINTING				
TAG	MANUFACTURER	COLOR NAME	COLOR #	NOTE
PNT1				
PNT2				
PNT3				
PNT4				
PNT5				
PNT6				
PNT7				
PNT8				
PNT9				
PNT10				
PNT11				
PNT12				

TILE CARPETING								
TAG	MANUFACTURER	COLLECTION	STYLE	COLOR NAME	COLOR #	SIZE	BACKING	INSTALL DIRECTION
CPTT1								
CPTT2								
CPTT3								
CPTT4								
CPTT5								

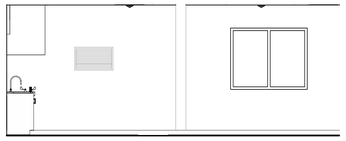
RESILIENT BASE & ACCESSORIES						
TAG	MANUFACTURER	TYPE	COLOR NAME	COLOR #	HEIGHT	NOTE
RB1						
RB2						
RB3						
RB4						
RB5						

INTERIOR FINISH SCHEDULE 1
12" = 1'-0"

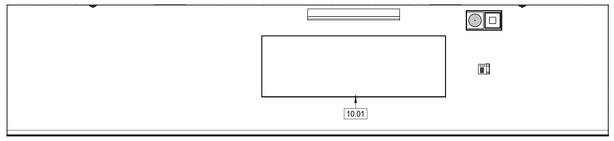


D1 CLASSROOM - EAST 1A
1/4" = 1'-0"

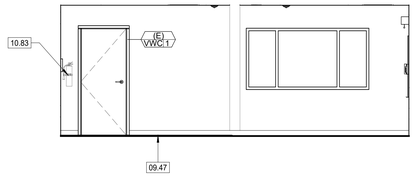
D1 CLASSROOM - SOUTH 1B
1/4" = 1'-0"



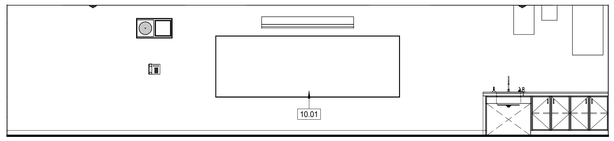
D1 CLASSROOM - WEST 1C
1/4" = 1'-0"



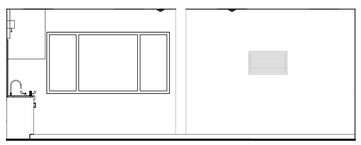
D1 CLASSROOM - NORTH 1D
1/4" = 1'-0"



D2 CLASSROOM - EAST 2A
1/4" = 1'-0"



D2 CLASSROOM - SOUTH 2B
1/4" = 1'-0"



D2 CLASSROOM - WEST 2C
1/4" = 1'-0"

D2 CLASSROOM - NORTH 2D
1/4" = 1'-0"

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LEGEND

SUBSTRATE
COLOR - SEE FINISH SCHEDULE
MATERIAL TYPE - SEE FINISH SCHEDULE

KEYNOTES

09.47	RESILIENT BASE
10.01	(E) MAGNETIC MARKER BOARD
10.14	ASSISTIVE LISTENING DEVICE SIGN
10.40	PRINT AND PINUP EGRESS MAP FROM REFERENCED DETAIL @ DISTRICT REQUEST. CONFIRM LOCATION WITH DISTRICT REPRESENTATIVE
10.83	REMOVE AND REPLACE (E) SURFACE MOUNTED FIRE EXTINGUISHER; HOWEVER, (E) TO REMAIN (AND ISSUE CREDIT TO OWNER DURING CONSTRUCTION), IF CONFIRMED (E) ACCESSORY HAS NOT EXPIRED

NOTES

1. NOT ALL EQUIPMENT, ACCESSORIES, DEVICES, ETC. ARE SHOWN FOR CLARITY, VIF PRIOR TO BID
2. ELEMENTS IDENTIFIED IN DRAWINGS TAKE PRECEDENCE IN THE EVENT OF DISCREPENCIES BETWEEN DRAWINGS AND SPECIFICATIONS

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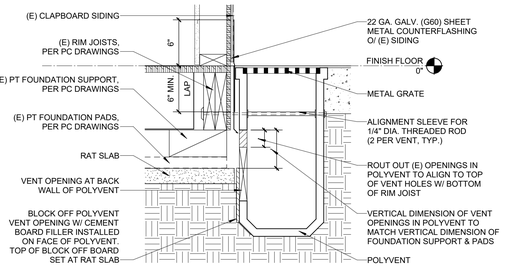
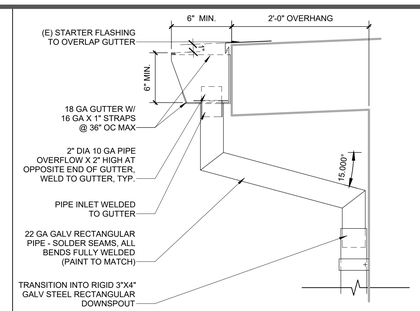
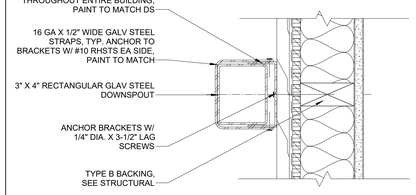


UNDERFLOOR VENT - RECESSED | 7
1 1/2" = 1'-0"

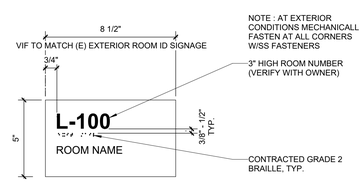


GUTTER & DOWNSPOUT | 8
1 1/2" = 1'-0"



NOTE: PROVIDE BKG IN WALL WHERE DS DOES NOT OCCUR AT BUILDING CORNERS

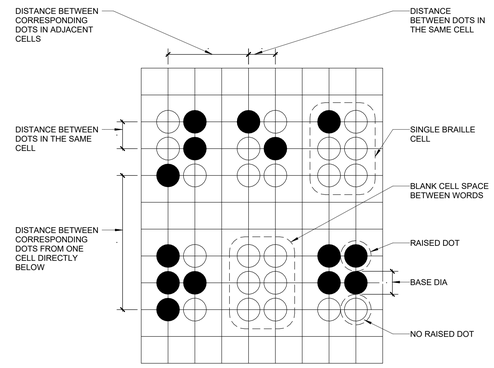
DOWNSPOUT MOUNTING | 10
3" = 1'-0"



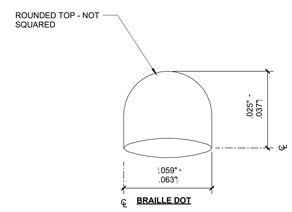
NOTE: SEE 1/A10.81 FOR ADDITIONAL INFORMATION AND SIGNAGE MOUNTING HEIGHTS.

10.14.25.01

TACTILE ROOM ID SIGN | 5
3" = 1'-0"



BRAILLE MEASUREMENT
CBC FIGURE 11B-703.3.1



BRAILLE DOT

NOTES:

1. CHARACTER TYPE: CHARACTERS ON SIGN SHALL BE RAISED 1/32" MINIMUM AND SHALL BE "FUTURA MEDIUM" UPPERCASE CHARACTERS ACCOMPANIED BY GRADE 2 BRAILLE.
2. CHARACTER SIZE: RAISED CHARACTERS SHALL BE A MINIMUM OF 5/8" AND A MAXIMUM OF 2" HIGH.
3. FINISH AND CONTRAST: CHARACTERS, SYMBOLS, AND THEIR BACKGROUND SHALL HAVE A NON-GLARE FINISH AND CONTRAST 70% MINIMUM WITH THEIR BACKGROUNDS.

   CHARACTER & SYMBOLS - "APCO" COLOR #A01 WHITE, UNO

   BACKGROUND - "APCO" COLOR #A54 GRAPHITE, UNO

   INTEGRAL COLOR FRAME: "APCO" COLOR PEARL GREY, UNO

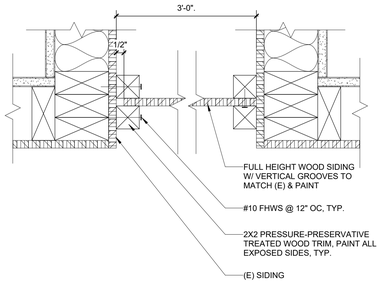
   PANEL: 1/4" THICK ACRYLIC PANEL WITH PHOTO POLYMER RAISED TACTILE COPY SUB-SURFACE SYMBOL, UNO
4. BRAILLE: CONTRACTED CALIFORNIA GRADE 2 BRAILLE SHALL BE USED WHERE BRAILLE IS REQUIRED, DOTS SHALL BE 1/10 INCH ON CENTER IN EACH CELL WITH 2/10 INCH SPACE BETWEEN CELLS AND HAVE DOMED OR ROUNDED TOPS. CBC TABLE 11B-703.3.1.
5. EXTERIOR SIGNS SHALL BE METAL COMPONENTS SUITABLE TO EXTERIOR USE AND SIMILAR TO INTERIOR SIGNS FOR SHAPE AND FORM.

*MEASURED CENTER TO CENTER — **CBC TABLE 11B-703.3.1**

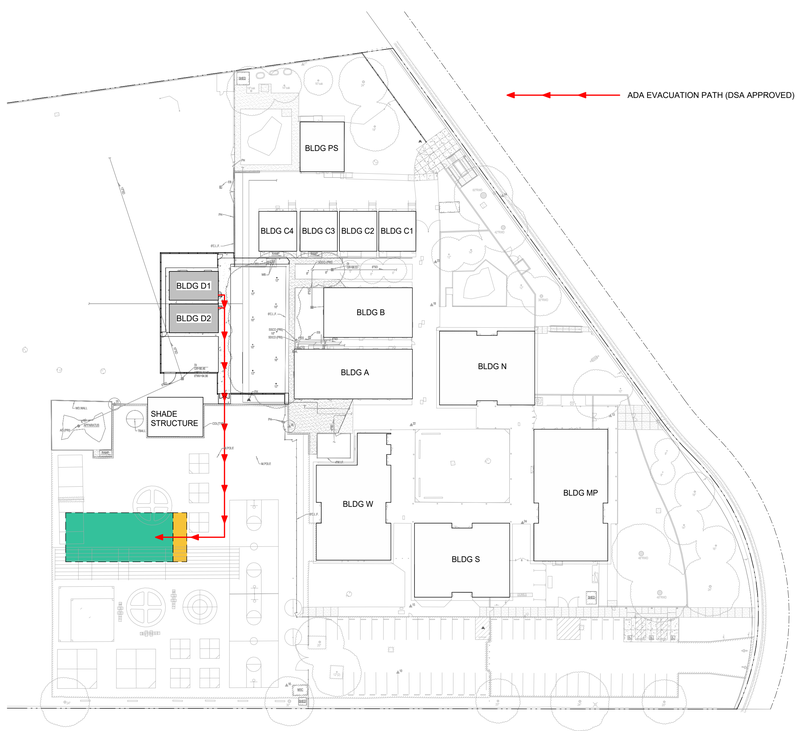
MEASUREMENT RANGE	MINIMUM IN INCHES MAXIMUM IN INCHES
DOT BASE DIAMETER	0.059 IN TO 0.063 IN
DISTANCE BETWEEN TWO DOTS IN THE SAME CELL*	0.100 IN
DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS*	0.300 IN
DOT HEIGHT	0.025 IN TO 0.037 IN
DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW*	0.395 TO 0.400 IN

10.14.03.01

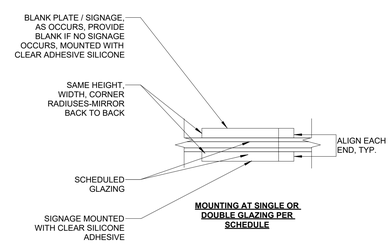
BRAILLE REQUIREMENTS | 3
3" = 1'-0"

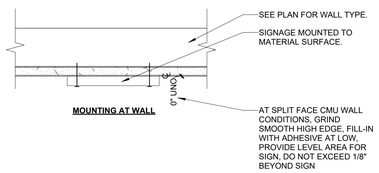


CLOSURE PANEL | 9
3" = 1'-0"



FUNDAMENTAL EVACUATION PLAN | 6
1" = 50'-0"

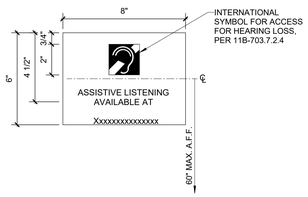




MOUNTING AT WALL

10.14.09.01

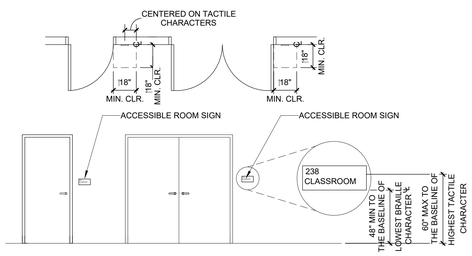
SIGN MOUNTING | 4
3" = 1'-0"



NOTE:
1. SEE 1/A10.81 FOR ADDITIONAL INFORMATION.
2. CONFIRM LOCATION OF ASSISTIVE LISTENING DEVICE LOCATION WITH OWNER PRIOR TO FABRICATION.

10.14.10.01

ASSISTIVE LISTENING DEVICE SIGN | 2
3" = 1'-0"



NOTES:

1. SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH ONE ACTIVE LEAF, THE SIGN SHALL BE LOCATED ON THE INACTIVE LEAF. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH TWO ACTIVE LEAVES, THE SIGN SHALL BE LOCATED TO THE RIGHT OF THE RIGHT HAND DOOR. FOR PAIRS OF DOORS WHERE DOOR SWING IS LIMITED TO 90 DEGREE, MOUNT SIGN 9" FROM EDGE OF DOOR. FOR PAIRS OF DOORS WHERE DOOR SWING EXCEEDS 90 DEGREES, MOUNT SIGN AT DOOR WIDTH PLUS 9" FROM EDGE OF DOOR. SIGNS CONTAINING TACTILE CHARACTERS SHALL BE LOCATED SO THAT A CLEAR FLOOR SPACE OF 18" MIN BY 18" MIN, CENTERED ON THE TACTILE CHARACTERS, IS PROVIDED BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND THE 45 DEGREE OPEN POSITION.
2. AT RESTROOM SIGNAGE, CONTRAST DOOR TO GEOMETRIC SYMBOL 70% LIGHT/DARK.
3. SEE 4/A10.81 FOR SIGNAGE ON GLAZING.

10.14.02.01

DOOR SIGNAGE LOCATIONS | 1
1/4" = 1'-0"

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ISSUE

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FACILITY:
ABRAHAM LINCOLN ELEMENTARY
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
TYPICAL DETAILS

DD SET

DATE: xxxx.xx.xx
CLIENT PROJ NO:
SHEET:

A10.81

THE LINE SHOWN ABOVE IS EQUAL TO ONE INCH ON ORIGINAL PAGE SIZE D
Autodesk Docs://316077000 SCUSD Abraham Lincoln TK Classroom Add R24/316077000-A-LNCLN-TK-INC 1-SITE.rvt
4/24/2026 10:05:45 AM
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EQUAL TO 1" WHEN PLOTTED ON ANSI FULL SIZE SHEETS OR ANSI FULL SIZE

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

INDICATES DIRECTION OF TRUE NORTH
PLAN OR DETAIL NUMBER
PLAN OR DETAIL NAME

NORTH — 1 — **VIEW NAME** — 1/8" = 1'-0" — PLAN OR DETAIL SCALE

INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS (SIM)
DETAIL REFERRED TO BY SECTION CUT (SIM; 1 / 4 / 2 / 3)
1 / M101 — SHEET DETAIL IS LOCATED ON — T101

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
NEW
EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
EXISTING
EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

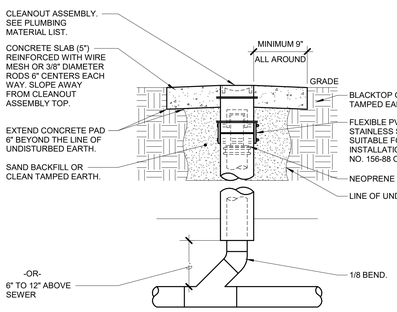
'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

FIRE AND SMOKE SEPARATIONS ARE NOT SHOWN ON THESE DOCUMENTS. CONTRACTOR SHALL REVIEW THE ARCHITECTURAL PLANS AND DETERMINE THE LOCATIONS OF ALL FIRE AND SMOKE PARTITIONS, BARRIERS, AND WALLS. THIS INCLUDES FLOOR RATINGS. PRICING SHALL INCLUDE ALL MATERIALS AND LABOR REQUIRED TO MAINTAIN THE RATINGS OF ALL RATED SEPARATIONS, WHETHER SHOWN ON THE ENGINEERING PLANS OR NOT.



1 **YARD CLEANOUT**
NO SCALE

SYMBOL LIST - PLUMBING SYSTEMS

SYMBOL	DESCRIPTION
CW	COLD WATER - POTABLE
SAN	SANITARY DRAINAGE

PLUMBING ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BT	BATHTUB
CB	CATCH BASIN
CI	CAST IRON
CO	CLEANOUT
CS	CLINICAL SINK
DB	DIALYSIS BOX
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
DN	DOWN
E	EXISTING
EE	EMERGENCY EYEWASH
ES	EMERGENCY SHOWER
ESE	EMERGENCY SHOWER/EYEWASH
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FM	FLOW METER
FS	FLOOR SINK
GD	GARBAGE DISPOSER
GI	GREASE INTERCEPTOR
HB	HOSE BIBB
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
L or LAV	LAVATORY
MB	MOP BASIN
MH	MANHOLE
MV	MIXING VALVE
NIC	NOT IN CONTRACT
NT	NEUTRALIZATION TANK
OS	OIL SEPARATOR
RD	ROOF DRAIN
SCCR	SHORT CIRCUIT CURRENT RATING
SH	SHOWER
SK	SINK
SS	SERVICE SINK
TD	TRENCH DRAIN
TP	TRAP PRIMER
TYP	TYPICAL
UR	URINAL
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WCO	WALL CLEANOUT
WF	WASH FOUNTAIN
WH	WATER HEATER
WMF	WASHING MACHINE FIXTURE
WM	WATER METER
WS	WATER SOFTENER
UB	UTILITY BOX
UON	UNLESS OTHERWISE NOTED
YCO	YARD CLEANOUT

CALIFORNIA DSA MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENT ANCHORAGE NOTES:

1. EQUIPMENT ANCHORAGE NOTE:
ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2025 CBC, SECTION 1617A.18 THROUGH 1617A.1.26 AND ASCE 7-22 CHAPTERS 13.26, AND 30.

   1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTION EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   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 APPROVED BY DSA.

   THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE: THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT 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 SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

2. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS BRACING NOTE.

   PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-22 SECTION 13.3 AS DEFINED INS ASCE 7-22 SECTION 13.5, 13.6.6, 13.6.7, 13.6.8, AND 2025 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.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. HCAI OPM FOR 2013 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)M ELECTRICAL DISTRIBUTION SYSTEMS (E):

PLUMBING SLOPE REQUIREMENTS:

BASED ON PLUMBING CODE: CPC-2025

INTERIOR:	
SANITARY WASTE:	1/4" PER FOOT
GREASE WASTE:	1/4" PER FOOT
STORM (GRAVITY):	1/8" PER FOOT
CONDENSATE AND INDIRECT DRAINAGE:	1/8" PER FOOT
SANITARY AND GREASE VENT:	NO SPECIFIC PITCH, PITCH TO FIXTURES
DOMESTIC WATER:	NO SPECIFIC PITCH, PITCH TO FIXTURES

PLUMBING MATERIAL LIST

TAG NAME	DESCRIPTION	MANUFACTURER AND MODEL
YCO-1	YARD CLEANOUT - ROUND, DURA-COATED CAST IRON, SIZE AS LISTED ON DRAWINGS, DOUBLE FLANGED HOUSING, HEAVY DUTY SECURED SCORIATED DURA-COATED CAST IRON COVER, LIFTING DEVICE, BRONZE CLEANOUT PLUG WITH GAS/WATER-TIGHT SEAL.	ZURN (Z1474), SMITH (4261), WADE (8401), JOSAM (58680), WATTS (CO-300-MF), MIFAB (C1300-MF), SIOUX CHIEF (850-9I WITH 853-F)

PLUMBING GENERAL NOTES:

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.
3. CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES.
4. ALL FIXTURES SHALL CONFORM TO FEDERAL ACT S.3874
5. INVERT ELEVATIONS ARE FROM EXISTING DRAWINGS AND MAY NOT BE ACCURATE. VERIFY ALL ELEVATIONS BEFORE BEGINNING WORK.
6. VERIFY UNDERGROUND PIPE SIZES, INVERT ELEVATIONS, AND LOCATIONS PRIOR TO BEGINNING ANY WORK.
7. REFER TO THE PLUMBING ROUGH-IN SCHEDULE FOR THE SIZES OF BRANCH PIPES TO PLUMBING FIXTURES.
8. FOR CLARITY, NOT ALL VALVES HAVE BEEN SHOWN. PROVIDE SHUTOFF VALVES IN DOMESTIC WATER PIPING SERVING EACH ROOM WITH FIXTURES. ANGLE STOPS SHALL NOT BE CONSIDERED SHUTOFF VALVES.
9. EXISTING CONDITIONS ON DEMOLITION PLANS ARE PROVIDED TO INDICATE THE GENERAL SCOPE OF ITEMS TO BE REMOVED.
10. P.C. SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW OR DEMOLITION WORK UNLESS NOTED OTHERWISE.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO FIRE PROTECTION, PLUMBING, AND PIPING.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PADS FOR ALL FLOOR-MOUNTED EQUIPMENT. PADS SHALL EXTEND A MINIMUM OF 6 INCHES BEYOND ALL SIDES OF EQUIPMENT, UNLESS SUCH EXTENSION WOULD ENCROACH ON REQUIRED WORKING CLEARANCES AT CONTROL PANELS OR ELECTRICAL EQUIPMENT. PROVIDE 1/2-INCH CHAMFER (45-DEGREE) OR 1/2-INCH RADIUS AT ALL HORIZONTAL EDGES.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

PLUMBING SHEET INDEX

P0.00	PLUMBING COVERSHEET
P1.00	SITE DEMOLITION PLAN - GENEVIEVE DIDION -PLUMBING
P2.00	SITE PLAN - PLUMBING NEW CONSTRUCTION
GRAND TOTAL: 3	

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Δ	DESCRIPTION	DATE

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PROJECT #26002109.00
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FACILITY:
ABRAHAM LINCOLN ELEMENTARY
3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
PLUMBING COVERSHEET

PROGRESS

DATE: **04/17/26**
CLIENT PROJ NO:
SHEET:

P0.00

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4/23/2026 11:08:46 PM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON 24x36 SHEETS OR HALF SCALE ON 12x18

1 SITE DEMOLITION PLAN - GENEVIEVE DIDION - PLUMBING

1" = 20'-0"

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FACILITY:

ABRAHAM LINCOLN ELEMENTARY

3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

SITE DEMOLITION PLAN - GENEVIEVE DIDION -PLUMBING

PROGRESS

DATE: **04/17/26**

CLIENT PROJ NO:

SHEET:

P1.00

Autodesk Docs://3186077000 SCUSD Abraham Lincoln TK Classroom Add R24/3186077000-MEPFT-LINCLN-TK-MOD-Classroom.rvt
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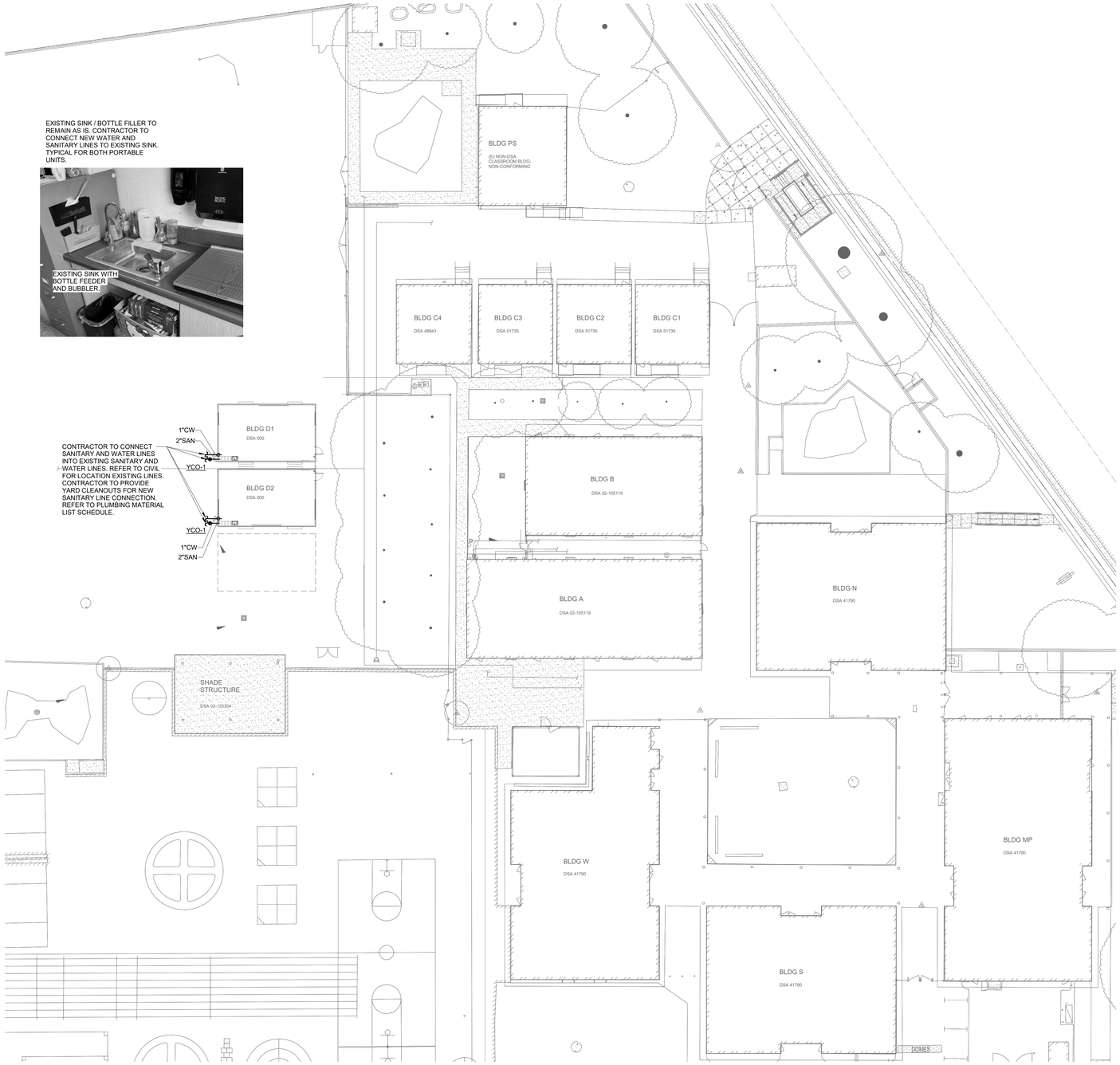
PLEASE RECYCLE

THIS LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON ANSI D SIZED SHEETS OR ISO ANSI C PAGE SIZE

EXISTING SINK / BOTTLE FILLER TO REMAIN AS IS. CONTRACTOR TO CONNECT NEW WATER AND SANITARY LINES TO EXISTING SINK. TYPICAL FOR BOTH PORTABLE UNITS.



NORTH

1 **SITE PLAN - PLUMBING NEW CONSTRUCTION**

1" = 20'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

Sacramento City Unified School District

HMC Architects — DESIGN FOR GOOD

NOT FOR CONSTRUCTION

3186-077-000

2101 CAPITOL AVENUE, SUITE 100, SACRAMENTO, CA, 95816

916 368 7990 / www.hmcarchitects.com © 2025 HMC GROUP

ISSUE

Δ	DESCRIPTION	DATE

IMEG

1677 EUREKA ROAD SUITE 102 ROSEVILLE, CA 95661 P: 916.780.2030 PROJECT #26002109.00

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3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

SITE PLAN - PLUMBING NEW CONSTRUCTION

PROGRESS

DATE: **04/17/26**

CLIENT PROJ NO:

SHEET:

P2.00

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PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH WHEN PLOTTED AT ORIGINAL PAPER SIZE

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED. SPECIFIC TO THE SHEET AND/OR DETAIL

INDICATES DIRECTION OF TRUE NORTH
PLAN OR DETAIL NUMBER
PLAN OR DETAIL NAME
PLAN OR DETAIL SCALE

NORTH — 1 — VIEW NAME — 1/8" = 1'-0"

SIM — 1" — M101
INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS
DETAIL REFERRED TO BY SECTION CUT
SHEET DETAIL IS LOCATED ON — T101
SIM — 1 4 2 3

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
NEW
EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN
EXISTING (NARROW LINE PATTERN)
EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

WORK BY OTHERS (NARROW LINE)
WORK BY OTHERS (NARROW LINE)
EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-(E) TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

'TAG'-(R) TAGS WITH DASH 'R' INDICATES THE REFERENCED OBJECT IS REMOVED

TAG-1 UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

FIRE AND SMOKE SEPARATIONS ARE NOT SHOWN ON THESE DOCUMENTS. CONTRACTOR SHALL REVIEW THE ARCHITECTURAL PLANS AND DETERMINE THE LOCATIONS OF ALL FIRE AND SMOKE PARTITIONS, BARRIERS, AND WALLS. THIS INCLUDES FLOOR RATINGS. PRICING SHALL INCLUDE ALL MATERIALS AND LABOR REQUIRED TO MAINTAIN THE RATINGS OF ALL RATED SEPARATIONS, WHETHER SHOWN ON THE ENGINEERING PLANS OR NOT.

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 20** EDITION UBC 20**
FIRE CODE:	IFC 20** EDITION -OR- NFPA: 1 20** EDITION
PLUMBING CODE:	IPC 20** EDITION UPC 20**
MEDICAL GAS CODE:	NFPA 99 - 20** EDITION
MECHANICAL CODE:	IMC 20** EDITION UMC 20**
ELECTRICAL CODE:	NFPA 70 (NEC) 20** EDITION
LIFE SAFETY CODE:	NFPA 101 20** EDITION
ENERGY CONSERVATION CODE:	IECC 20** ASHRAE 90.1 20**
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	----
MECHANICAL	----
ELECTRICAL	----
TECHNOLOGY	----
MEDICAL EQUIPMENT	----
ACOUSTICAL	----

NTD: DELETE THIS ITEM IF NOT REQUIRED BY PROJECT MANAGER

ELECTRICAL SYMBOL LIST - POWER

SYMBOL	EQUIP ABBREV	SPEC SECTION	DESCRIPTION

ELECTRICAL SYMBOL LIST - RECEPTACLES

SYMBOL	TAG	EQUIP ABBREV	SPEC SECTION	DESCRIPTION

ELECTRICAL EQUIPMENT TAGS

TAG:	DESCRIPTION:	RELATED SPECIFICATION
ATS-#	AUTOMATIC TRANSFER SWITCH, REFER TO TRANSFER SWITCH SCHEDULE	26 36 00
BAT-#	BATTERY RACK	26 32 13
C-#	GENERAL PURPOSE CONTACTOR	26 28 21
CR-#	CORD REEL	26 27 26
CT-#	CABLE TRAY	26 05 36
CUP-#	CUSTOM UTILITY PEDESTAL	26 27 16
DIM-#	DC DIMMING PANEL	26 09 33
DP-#	DISTRIBUTION PANEL	26 24 16
DR-#	DIMMING RACK	26 09 33
DT-#	GENERATOR DAY TANK	26 32 13
DTR-#	TRANSFORMER - DISTRIBUTION TYPE REFER TO TRANSFORMER SCHEDULE	26 12 19 26 12 13 26 12 16 26 12 21
EVCS-#	ELECTRICAL VEHICLE CHARGING STATION	26 27 29
GCC-#	TEMP. GENERATOR/LOAD BANK CONNECTION CABINET	26 36 00
GCP-#	GENERATOR CONTROL PANEL	26 32 13
GEN-#	GENERATOR	26 32 13
GPS-#	GENERATOR PARALLELING AND DISTRIBUTION SWITCHBOARD	26 24 14 26 13 35
GANN-#	GENERATOR ANNUNCIATOR PANEL	26 32 13
HH-#	HANDHOLE	26 05 33
HT-#	HEAT TAPE	26 05 17
INV-#	LIGHTING INVERTER	26 52 00
M-#	METER DISTRIBUTION CENTER	26 20 00
MC-#	EXTERIOR MOUNTED METERING CABINET	26 20 00
MCC-#	MOTOR CONTROL CENTER, REFER TO MOTOR CONTROL SCHEDULE	26 14 19
MH-#	MANHOLE	26 05 37
MPC-#	PACKAGED POWER CENTER	26 24 23
MTS-#	MANUAL TRANSFER SWITCH, REFER TO TRANSFER SWITCH SCHEDULE	26 36 00
MVSG-#	MEDIUM VOLTAGE SWITCHGEAR	26 13 13 26 13 34
MX-#	MANUAL SWITCH, REFER TO DISCONNECT AND STARTER SCHEDULE	26 24 19
PDU-#	POWER DISTRIBUTION UNIT	26 26 00
PS-#	PAD-MOUNT MEDIUM VOLTAGE SWITCH	26 13 15
R-#	RELAY	26 09 39
RA-ATS-#	REMOTE ANNUNCIATOR FOR ATS	26 36 00
RFFS-#	REMOTE FUEL FILL STATION	26 32 13
SB-#	SWITCHBOARD	26 24 13
SC-#	SECTIONALIZING CABINET	26 13 14
SG-#	SWITCHGEAR	26 23 00
SMP-#	SNOW MELT CONTROL PANEL	26 05 17
SMS-#	PAVEMENT MOUNTED DEICING CONTROLLER	26 05 17
SPD-#	SURGE PROTECTION DEVICE	26 43 00
UD-#	UNDERFLOOR DUCT - TRENCH DUCT - CELLULAR FLOOR DUCT	26 05 38
UPS-#	UNINTERRUPTIBLE POWER SUPPLY	26 33 53
US-#	UNIT SUBSTATION	26 11 00
VFD-#	VARIABLE FREQUENCY DRIVE - REFER TO VFD SCHEDULE	26 29 23
WD-#	WALL DUCT	26 05 38

SUGGESTED MATRIX OF RESPONSIBILITY

ITEM:	SHOWN ON:	FURNISHED BY:	INSTALLED BY:	NOTES:
TECHNOLOGY ROUGH-IN, REFER TO TECHNOLOGY EQUIPMENT SCHEDULE AND SPECIFICATIONS FOR DEFINITION	T-SERIES	E.C.	E.C.	3. 4.
INFORMATION OUTLET FACEPLATES, JACKS, AND TERMINATIONS	T-SERIES	T.C.	T.C.	
CONDUIT SLEEVES (WHEN SHOWN ON DRAWINGS)	T-SERIES	E.C.	E.C.	
CONDUIT SLEEVES (NOT SHOWN BUT REQUIRED FOR PROPER INSTALLATION OF SYSTEM)	N/A	T.C.	T.C.	2. 4.
TELECOMMUNICATION SYSTEMS ROUGH-IN	T-SERIES	E.C. [T.C]	E.C.	1.
TELECOMMUNICATION EQUIPMENT, CABLING, AND TERMINATIONS	T-SERIES	T.C.	T.C.	
NURSE CALL ROUGH-IN	T-SERIES	N.C.C. [E.C.]	E.C.	
NURSE CALL EQUIPMENT, CABLING, AND TERMINATIONS	T-SERIES	N.C.C. [OWNER]		
CABLE TRAY (INCLUDING WIRE BASKET TRAY) REFER TO SPECIFICATION SECTION 27 05 28 FOR DEFINITION	T-SERIES	E.C.	E.C.	
LADDER RACK	T-SERIES	T.C.	T.C.	5.
GROUNDING LUGS ON TECHNOLOGY EQUIPMENT	T-SERIES	T.C.	E.C.	6.
BONDING SYSTEM FOR TECHNOLOGY SYSTEM, REFER TO SPECIFICATION SECTION 27 05 26 FOR DEFINITION	T-SERIES	E.C.	E.C.	7. 8.
CONNECTION OF TECHNOLOGY BONDING SYSTEM TO THE ELECTRICAL GROUND SYSTEM	T-SERIES	E.C.	E.C.	
LINE VOLTAGE POWER (+120V OR GREATER)	E-SERIES	E.C.	E.C.	
LINE VOLTAGE POWER (NOT SHOWN BUT REQUIRED FOR PROPER INSTALLATION OF SYSTEM)	N/A	T.C.	E.C.	2. 4.
LINE VOLTAGE POWER FOR DOOR HARDWARE POWER SUPPLIES	ARCH SPEC	E.C.	E.C.	
LOW VOLTAGE CABLING FOR TECHNOLOGY SYSTEMS	T-SERIES	T.C.	T.C.	
CABLE HANGERS AND SUPPORTS OR OTHER CABLE ROUTING METHODS (OTHER THAN CONDUIT AND CABLE TRAY)	T-SERIES	T.C.	T.C.	5.
TECHNOLOGY SERVICE ENTRANCE CONDUITS, HANDHOLES, AND MANHOLES	[E]T-SERIES	E.C.	E.C.	
FLOOR BOX (ROUGH-IN)	T & E SERIES	E.C.	E.C.	

SUGGESTED MATRIX OF RESPONSIBILITY NOTES

Key Name	SUGGESTED MATRIX NOTES
1.	LOCATIONS OF TELECOMMUNICATIONS ROUGH-INS SHALL BE INDICATED BY THE INFORMATION OUTLET SYMBOLS ON THE DRAWINGS. REFER TO THE TECHNOLOGY SYMBOL LIST FOR ADDITIONAL INFORMATION.
2.	BASED ON THE INHERENT DIFFERENCES IN PRODUCTS FROM VARIOUS MANUFACTURERS, ALL REQUIRED EQUIPMENT MAY NOT BE SHOWN ON THE DRAWINGS FOR ALL ACCEPTABLE MANUFACTURERS.
3.	INCLUDES BACKBOXES AND CONDUIT REQUIRED FOR THE TECHNOLOGY SYSTEMS INSTALLATION. THE E.C. SHALL BASE THE BID ON THE BASIS OF DESIGN SHOWN ON THE CONTRACT DOCUMENTS.
4.	ALL CHANGES TO THE SLEEVES, BACKBOXES, CONDUITS, AND POWER REQUIRED BECAUSE OF THE T.C.'S SELECTION OF AN ALTERNATE ACCEPTABLE MANUFACTURER OR FROM SYSTEM CONFIGURATIONS THAT ARE LEFT TO THE CHOICE OF THE CONTRACTOR SHALL BE INCLUDED IN THE T.C.'S BID. THIS BID SHALL INCLUDE INSTALLATION BY A LICENSED ELECTRICIAN.
5.	UNLESS TRADE RULES DICTATE OTHERWISE.
6.	FURNISHED AS PART OF THE EQUIPMENT WHEN POSSIBLE, OR FURNISHED TO THE E.C. FOR INSTALLATION IN THE FIELD.
7.	INCLUDES ALL CONDUCTORS, GROUND BARS, AND TERMINATIONS FOR THE COMPLETE BONDING SYSTEM REQUIRED BY THE SPECIFICATIONS.
8.	REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF PANELS AND SWITCHBOARDS SHOWN IN THE TECHNOLOGY BONDING RISER DIAGRAM AND TYPICAL TELECOM ROOM BONDING FLOW DIAGRAM.

ELECTRICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
ABV	ABOVE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ASR	ARCHITECTURAL SURFACE RACEWAY
BC	BELOW COUNTER
C	CONDUIT (BRANCH CIRCUIT OR FEEDER CONTEXT)
CO	CONDUIT AND BOX ROUGH-IN ONLY (ROUGH-IN ONLY)
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUNDING CONDUCTOR
EOL	END OF LINE
EPO	EMERGENCY POWER OFF
GFR	GROUND FAULT REMOTE
HOA	HAND/OFF/AUTO
ITR	IT RACK MOUNTED RECEPTACLE
NC	NORMALLY CLOSED
NEMA #	NEMA RATING
NIC	NOT IN CONTRACTED SCOPE
NO	NORMALLY OPEN
ROOF	EQUIPMENT LOCATED ON ROOF ABOVE
SM	SURFACE MOUNTED
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED

HEALTHCARE EQUIPMENT ABBREVIATION KEY

ABBR:	DESCRIPTION:
AED	AUTOMATIC EXTERNAL DEFIBRILLATOR - CRASH CART
BSC	BIOSAFETY CABINET
BW	BLANKET WARMER
DIS	MEDICAL EQUIPMENT DISINFECTOR
INF	INFUSION PUMP
LIFT	PATIENT LIFT
MAB	MEDICAL ANESTHESIA BOOM
MEB	MEDICAL EQUIPMENT BOOM
MED	MEDICATION DISPENSING CABINETS
MEL	MEDICAL EXAM LIGHT (BOOM LIGHT)
PASS	MEDICAL PASS THRU CABINET
PEG	PORTABLE MEDICAL EQUIPMENT (X-RAY)
PNTU	PNEUMATIC TUBE
SSK	SURGICAL SCRUB SINK
STER	MEDICAL EQUIPMENT STERILIZER
UCL	MEDICAL ULTRASONIC CLEANER

ELECTRICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
2. NOT ALL EXISTING EQUIPMENT, LUMINAIRES, AND CONDUIT ARE SHOWN. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
3. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS PRIOR TO FABRICATION OF CABLE TRAY, BUSWAY, CONDUIT RACKS, AND OTHER SYSTEMS. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. ELECTRICAL CONTRACTOR SHALL REVIEW EXISTING CONDITIONS TO VERIFY ACCESSIBILITY TO THE AREAS OF THEIR WORK INCLUDING WALLS, FLOOR, CEILINGS, CEILING TILES/GRID, AND ROOF. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE CUTTING, REMOVAL, PATCHING, AND REINSTALLATION OF AFFECTED AREAS ASSOCIATED WITH THEIR WORK BY COORDINATING WITH THE GENERAL CONTRACTOR OR QUALIFIED CONTRACTOR.
5. WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

ELECTRICAL PHASING NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

1. REFER TO **[ARCHITECTURAL]** DRAWINGS FOR GENERAL DESCRIPTION OF PHASES.
2. REFER TO **[CONSTRUCTION MANAGER'S/GENERAL CONTRACTOR'S/ARCHITECT'S]** INSTRUCTIONS FOR MORE DETAILS AND PHASING SCHEDULES AND FOR CONCURRENT WORK. MECHANICAL, ELECTRICAL AND TECHNOLOGY DRAWINGS DEPICT THE INTENT OF THE FINAL DESIGN. THE MECHANICAL, ELECTRICAL, AND TECHNOLOGY DRAWINGS DO NOT DEPICT THE MEANS AND METHODS TO MEET THE REQUIREMENTS OF THE PHASING CRITERIA.
3. REVIEW PROJECT PHASING PLANS TO COORDINATE DEMOLITION WORK, OUTAGES, ETC. WITH AFFECTED ADJACENT AREAS.
4. PROVIDE TEMPORARY LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS, ETC. AS NEEDED TO MAINTAIN SERVICE TO ALL AREAS DURING ALL PHASES OF PROJECT.

EQUIPMENT ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	AUTOMATIC DOOR OPERATOR WITH SENSOR
ATM	AUTOMATIC TELLER MACHINE
COF	COFFEE
COPY	COPIER
DB	DOOR BELL
DISP	GARBAGE DISPOSAL
DLVL	DOCK LEVELER
DOOR	DOOR OPERATOR, ELECTRIC
DRY	DRYER, CLOTHS
DW	DISHWASHER
ELEV	ELEVATOR
ELVC	ELEVATOR CAB CONNECTION
ELVD	ELEVATOR AUDIO VISUAL DATA SYSTEM
EPT	ELECTRONIC PAPER TOWEL DISPENSER (NON-BATTERY)
ESP	ESPRESSO MACHINE
EWC	ELECTRIC WATER COOLER
EWCC	ELECTRIC WATER COOLER CONDENSER
FAN	CEILING FAN
FDO	FIRE DOOR OPERATOR
FFE	OWNER FURNISHED FIXTURES, FURNITURE, AND EQUIPMENT
FURN	OWNER FURNITURE
HD	HAND DRYER
HOOD	KITCHEN EXHAUST HOOD
ICE	ICE MACHINE
MS	MOTORIZED SHADE
MW	MICROWAVE
OHD	OVERHEAD DOOR
OVEN	OVEN, WALL
PFR	PLUMB FIXTURE RECEPT FOR LV VALVE POWER
PP	PUSH PAD AUTOMATIC DOOR OPERATOR (REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATION)
PW	POWER WASHER SPECIAL RECEPTACLE
RANGE	ELECTRICAL COOKTOP RANGE
REF	REFRIGERATOR
SIGN	DEDICATED SIGNAGE CIRCUIT
SINK	SCRUB SINK
STOVE	RANGE / OVEN APPLIANCE
TCP	TEMPERATURE CONTROLS PANEL
TRSH	TRASH COMPACTOR
TV	TELEVISION - MONITOR - DISPLAY
UCF	UNDERCOUNTER FREEZER
UCM	UNDERCOUNTER MICROWAVE
UCR	UNDERCOUNTER REFRIGERATOR
VEND	VENDING MACHINE

ELECTRICAL INSTALLATION NOTES:

1. **[THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2010 (LATEST PUBLISHED) ADA STANDARDS FOR ACCESSIBLE DESIGN. REFER TO THE ADA STANDARDS FOR ALL CONFIGURATION DETAILS ON THIS PAGE FOR ADDITIONAL INFORMATION.] [CHICAGO. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE CITY OF CHICAGO MAYOR'S OFFICE FOR PEOPLE WITH DISABILITIES (MOPD).] [CALIFORNIA. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE CALIFORNIA ACCESSIBILITY CODE REQUIREMENTS. REFER TO THE ARCHITECTURAL DRAWINGS ACCESSIBILITY STANDARDS.]**
2. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
3. **[EMERGENCY, LEGALLY REQUIRED, OPTIONAL STANDBY] [LIFE SAFETY, CRITICAL, EQUIPMENT]** BRANCH WIRING FOR FEEDERS AND BRANCH CIRCUITS SHALL BE ROUTED IN SEPARATE RACEWAY, JUNCTION BOXES, PULL BOXES, AND CABINETS. WIRING FOR EACH BRANCH SHALL BE INDEPENDENT FROM OTHER BRANCHES, INCLUDING THE NORMAL BRANCH.
4. FLUSH MOUNT ALL LIGHTING CONTROL DEVICES AT +42" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED.
5. FLUSH MOUNT ALL DUPLEX RECEPTACLES AND TECHNOLOGY OUTLETS AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED. MOUNT EXTERIOR LOCATED RECEPTACLES WITH WHILE-IN-USE COVERS AT +20" FROM FINISHED GRADE (CENTER DIMENSIONS) TO MAINTAIN INSTALLATION ADA COMPLIANCE.
6. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO **[27 05 03 AND 28 05 03] [DIVISION 7] [26 05 03]** FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
7. CONNECTION FOR ELECTRIC WATER COOLERS (EWC) SHALL BE A JUNCTION BOX CONCEALED BEHIND WATER COOLER ACCESS PLATE OR BE A GFI RECEPTACLE LOCATED DIRECTLY BELOW AND CENTERED ON EWC. CONTRACTOR SHALL VERIFY TYPE OF EWC TO BE INSTALLED.
8. MOUNT ALL FIRE ALARM PULL STATIONS AT +42" FROM FLOOR (CENTERLINE DIMENSION) EXCEPT WHERE OTHERWISE NOTED.
9. INSTALL ALL WALL MOUNTED FIRE ALARM NOTIFICATION DEVICES AT 90" ABOVE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER, EXCEPT WHERE OTHERWISE NOTED. HEIGHT SHALL BE MEASURED TO THE TOP OF THE DEVICE.
10. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CEILING MOUNTED DEVICES AND EQUIPMENT WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS,CARBON MONOXIDE DETECTORS, AND OCCUPANCY/VACANCY SENSORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE. CARBON MONOXIDE DETECTORS SHALL BE LOCATED 10 PLUS FT FROM FIRE PLACES, COOKING, AND SIMILAR FUEL-BURNING APPLIANCES.
11. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION, THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS, OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
12. ELECTRICAL AND TECHNOLOGY EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
14. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH. **[NTD: EDIT TO MATCH SCOPE]**
15. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER ELECTRICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS
16. ELECTRICAL IDENTIFICATION. REFER TO SPECIFICATION SECTION 26 05 53 FOR COLOR/LABEL REQUIREMENTS FOR CONDUIT, BOX, CABLE/WIRE, AND EQUIPMENT.

RECEPTACLE SUBSCRIPT KEY:

DEVICE KEY:

DEVICE — # = MOUNTING (IF APPLICABLE)
1 = CIRCUIT NUMBER

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1

ELECTRICAL MOUNTING SUBSCRIPT KEY:

A	MOUNT AT +#" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH
C	MOUNT AT CEILING (DEVICE OR ROUGH-IN CONTEXT)
H	MOUNT ORIENTED HORIZONTALLY
L	MOUNT IN CASEWORK
M	MOUNT IN MODULAR FURNITURE
R	MOUNT IN SURFACE RACEWAY
SM	SURFACE MOUNTED
WG	WIRE GUARD
+#"	MOUNT AT #" TO CENTERLINE ABOVE FINISHED FLOOR

SHADED DEVICE INDICATES DEVICE IS CONNECTED TO AN EMERGENCY CIRCUIT.

DEVICE — E

ELECTRICAL SHEET INDEX

E0.00	ELECTRICAL COVERSHEET
E0.01	ELECTRICAL COVERSHEET
E1.00	SITE DEMOLITION PLAN - GENEVIEVE DIDION - ELECTRICAL
E2.00	SITE PLAN - ELECTRICAL NEW CONSTRUCTION
E2.01	SITE PLAN - EGRESS PHOTOMETRIC
E2.10	FLOOR PLAN - ELECTRICAL NEW CONSTRUCTION
E4.00	ELECTRICAL DETAILS
E5.00	ELECTRICAL DIAGRAMS
E6.00	ELECTRICAL SCHEDULES
E7.00	ELECTRICAL PANEL SCHEDULES
GRAND TOTAL: 10	

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SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

ELECTRICAL COVERSHEET

PROGRESS

DATE: **08/02/13**

CLIENT PROJ NO:

SHEET:

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CALIFORNIA DSA MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENT ANCHORAGE NOTES:

1. EQUIPMENT ANCHORAGE NOTE:
   ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2025 CBC, SECTION 1617A.18 THROUGH 1617A.1.26 AND ASCE 7-22 CHAPTERS 13.26, AND 30.

   1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTION EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   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 APPROVED BY DSA.

   THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT 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 SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

2. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS BRACING NOTE.

   PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-22 SECTION 13.3 AS DEFINED INS ASCE 7-22 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2025 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.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. HCAI OPM FOR 2013 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)M ELECTRICAL DISTRIBUTION SYSTEMS (E):

APPLICABLE CODES AND STANDARDS:

[2025] CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 1

[2025] CALIFORNIA BUILDING CODE (CBC)
CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 2
(2021 INTERNATIONAL BUILDING CODE (IBC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA ELECTRICAL CODE (CEC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 3
(2020 NATIONAL ELECTRICAL CODE (NEC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA MECHANICAL CODE (CMC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 4
(2021 UNIFORM MECHANICAL CODE (UMC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA PLUMBING CODE (CPC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 5
(2021 UNIFORM MECHANICAL CODE (UPC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA ENERGY CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 6

[2025] CALIFORNIA HISTORICAL BUILDING CODE (CHBC)
CALIFORNIA CODE OF REGULATIONS (CHBC) TITLE 24, PART 8

[2025] CALIFORNIA FIRE CODE (CFC)
CALIFORNIA CODES OF REGULATIONS (CRR) TITLE 24, PART 9
(2021 INTERNATIONAL FIRE CODE (IFC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA EXISTING BUILDING CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 10
(2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC))

[2025] CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)
CALIFORNIA CODES OF REGULATIONS (CCR) TITLE 24, PART 11

[2025] CALIFORNIA REFERENCED STANDARDS CODE
CALIFORNIA DOE OF REGULATIONS (CCR) TITLE 24, PART 12

AMERICANS WITH DISABILITIES ACT (ADA)
TITLE II - ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAG)
1990 STATE FIRE MARSHAL REGULATIONS AND AMENDMENTS TO-DATE

CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, CALIFORNIA STATE ACCESSIBILITY STANDARDS CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 19

NFPA 13 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS **[2025]** EDITION
(CA AMENDED)

NFPA 14 STANDARDS FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS **[2019]** EDITION
(CA AMENDED)

NFPA 17 STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS **[2021]** EDITION

NFPA 17A STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS **[2017]** EDITION

NFPA 20 STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION **[2019]** 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 **[2019]** EDITION (CA AMENDED)

NFPA 54 NATIONAL FUEL GAS CODE **[2018]** EDITION (CA AMENDED)

NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE **[2022]** EDITION (CA AMENDED)

NFPA 80 STANDARD FOR FIRE DOORS AND OTHER OPENINGS PROTECTIVES **[2019]** EDITION

NFPA 90A STANDARD FOR INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS **[2018]** EDITION (CA AMENDED)

NFPA 99 HEALTHCARE FACILITIES CODE **[2021]** EDITION (CA AMENDED)

NFPA 418 STANDARD FOR HELIPORTS **[2016]** EDITION (CA AMENDED)

NFPA 2001 STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS **[2018]** EDITION
(CA AMENDED)

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]** (R2012)

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CALIFORNIA BUILDING CODE (CBC) CHAPTER 35 AND CALIFORNIA FIRE CODE (CFC) CHAPTER 80

HCAI 20A BRANCH CIRCUIT WIRING NOTE:

WIRING:
1. BRANCH CIRCUIT CONDUCTORS SHALL BE COOPER 12 AWG (UNLESS SPECIFICALLY NOTED OTHERWISE) TYPE THHN/THWN-2 THERMOPLASTIC 600V, 90 DEGREE CELSIUS AND UL LISTED.
2. PROVIDE DEDICATED NEUTRALS FOR ALL 120V AND/OR 277V CIRCUITS, AND A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR WIRE IN EACH CONDUIT.
3. MAXIMUM OF 9 CURRENT CARRYING (#10'S) WIRES SHALL BE ALLOWED IN A SINGLE 3/4" CONDUIT. THE CONTRACTOR MAY COMBINE UP TO (4) 1-CIRCUIT HOMERUNS IN ONE CONDUIT. (IE. 4#10 AWG HOTS + 1 GROUND WIRE OR UP TO (3) 3-PHASE #10 AWG HOMERUNS.)

JUNCTION BOXES:
1. THE MINIMUM SIZE OUTLET OR J-BOX PERMITTED IN A WALL IS 4" X 1-1/2" DEEP. OUTLET AND/OR JUNCTION BOXES SHALL CONTAIN NO MORE THAN THE FOLLOWING NUMBER F #12 WIRES FOR SIZE OF BOX INDICATED:
   A. 4" SQ BY 1-1/2" D = 9 CONDUCTORS, 4" SQ BY 2-1/8" D = 13 CONDUCTORS, 4-11/16" SQ BY 1-1/2" D = 13 CONDUCTORS, 4-11/16" SQ BY 2-1/8" = 18. ALL OUTLET BOXES CONTAINING MORE THAN ONE DEVICE SHALL BE GANGED, (2) DEVICES DOUBLE GANGED MINIMUM.

HCAI REMODEL GENERAL NOTES:

1. THE INTENT OF THE CONSTRUCTION DOCUMENTS IS TO RECONSTRUCT THE HOSPITAL BUILDING IN ACCORDANCE WITH THE 2022 CBSC. SHOULD ANY CONDITION DEVELOP NOT COVERED BY THE APPROVED CONSTRUCTION DOCUMENTS, WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH THE 2022 CBSC, AMENDED CONSTRUCTION DOCUMENTS (ACD's) DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY OSHP BEFORE PROCEEDING WITH THE WORK.
2. SUPPORTS AND ATTACHMENTS OF ALL EQUIPMENT TO BE INSTALLED AS A PART OF THIS PROJECT SHALL BE DETAILED ON CONSTRUCTION DOCUMENTS. EXCEPT THOSE EXEMPTED BY THE 2022 CBC SECTION 1617A.1.18 AND PIN 68. EQUIPMENT SUPPORTS AND ATTACHMENTS SHALL BE APPROVED BY THE APPROPRIATE REGISTERED DESIGN PROFESSIONAL (RDP) AND HCAI AS PART OF FIELD REVIEW/OBSERVATIONS. THE INSPECTOR OF RECORD (IOR) SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.

HCAI SUPPORT/BRACING OF CONDUIT:

CONDUITS SHALL BE SUPPORTED AND BRACED PER HCAI PRE-APPROVAL OF MANUFACTURERS CERTIFICATION **(OPM)**, IF THE CONSTRUCTION DOCUMENT PROVIDES SUPPORT SYSTEM OTHER THAN THE MENTIONED ABOVE. CALCULATION AND COMPLETE DETAILS FOR THE PROPOSED SYSTEM SHALL BE SUBMITTED TO HCAI FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND INSTALLATION.

1. LAYOUT DRAWING OF SUPPORTS, ATTACHMENTS, AND BRACING SYSTEMS IN ACCORDANCE WITH THE PRE-APPROVAL SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL (RDP) IN RESPONSIBLE CHARGE OF THE PROJECT FOR REVIEW TO VERIFY THAT THE DETAILS ARE IN CONFORMANCE WITH THE CODE REQUIREMENTS. HE LAYOUT DRAWINGS SHALL AS A MINIMUM SATISFY THE REQUIREMENTS OF ASCE 7 SECTION 13.6 AS MODIFIED BY THE CBC 2022 SECTION 1617A.
   A. THE STRUCTURAL ENGINEER OF RECORD (SEOR) SHALL VERIFY THAT THE SUPPORTING STRUCTURE IS ADEQUATE FOR THE FORCES IMPOSED ON IT BY THE SUPPORTS, ATTACHMENTS, AND BRACES INSTALLED IN ACCORDANCE WITH THE PRE-APPROVAL IN ADDITION TO ALL OTHER LOADS.
   B. THE SEOR SHALL FORWARD THE SUPPORTS, ATTACHMENTS, AND BRACING DRAWINGS (INCLUDING APPROVED AMENDED CONSTRUCTION DOCUMENTS FOR SUPPLEMENTARY FRAMING WHERE REQUIRED) TO THE DISCIPLINE IN RESPONSIBLE CHANGE WITH A NOTATION INDICATING THAT THE DRAWINGS HAVE BEEN REVIEWED AND ARE IN GENERAL CONFORMANCE WITH THE PRE-APPROVAL AND DESIGN OF THE PROJECT.
   C. A "SHOP DRAWING STAMP" MAY BE USED TO INDICATE COMPLIANCE WITH THIS REQUIREMENT.
   D. THE REGISTERED DESIGN PROFESSIONAL (RDP), OTHER THAN (SEOR), MAY PROVIDE THE SHOP DRAWING STAMP FOR SMALL PROJECTS AT THE DISCRETION OF THE HCAI DISTRICT STRUCTURAL ENGINEER.
2. THE SEOR SHALL DESIGN ANY SUPPLEMENTARY FRAMING THAT IS NEEDED TO RESIST THE LOADS, MAINTAIN STABILITY AND/OR IS REQUIRED FOR INSTALLATION OF PRE-APPROVED SYSTEM.
3. THE LAYOUT DRAWINGS (WITH THE SHOP DRAWING STAMP) SHALL BE SUBMITTED TO THE HCAI TO REVIEW.
   A. THE SUPPLEMENT FRAMING SHALL BE SUBMITTED TO HCAI AS AN AMENDED CONSTRUCTION DOCUMENTS (ACD).
      a. STRUCTURE SUPPORTING THE DISTRIBUTION SYSTEM HAS ADEQUATE CAPACITY:
      b. SEISMIC DESIGN FORCES (Fp) ARE IN ACCORDANCE WITH THE CBC 2022, AND
      c. VERIFY THAT SUBMITTAL IS WITHIN THE SCOPE OF CAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)
   B. SIZE OF DISTRIBUTION SYSTEM COMPONENTS
   C. SPACING OF BRACING AND FLEX JOINTS, AND
   D. SUBSTRATE FOR ATTACHMENTS
4. THE LAYOUT DRAWINGS (WITH THE SHOP DRAWING STAMP) SHALL BE KEPT ON THE JOBSITE AND CAN BE USED FOR INSTALLATION OF THE SUPPORT AND BRACING.
   A. HCAI FILED STAFF WILL REVIEW THE INSTALLATION
5. A COPY OF THE CHOSEN BRACING SYSTEM(S) INSTALLATION GUIDE/OPM MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING THE INSTALLATION OF HANGERS AND/OR BRACES.
   A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COPIES OF OPM AND FURNISH THE IOR WITH ONE COPY OF EACH.
6. COMPONENTS OF TWO OR MORE PRE-APPROVED BRACING SYSTEM SHALL NOT BE MIXED.
   A. ONLY ONE PRE-APPROVED BRACING SYSTEM MAY BE USED FOR A RUN CONDUIT.
   B. ANY SUBSTITUTION OF COMPONENT OF AN OP SYSTEM SHALL REQUIRE HCAI REVIEW AND APPROVAL.

REFERENCE 2022 CAC SECTIONS 7-115, 7-126, 7-153, AND CBC 2022 SECTION 107

SCOPE OF WORK NOTES:

1. ELECTRICAL SERVICE ENTRANCE, UTILITY METERING, AND GROUNDING ELECTRODE SYSTEM
2. LIGHTING AND LIGHTING CONTROLS
3. ELECTRICAL POWER DISTRIBUTION SYSTEM
4. BRANCH ELECTRICAL POWER SYSTEM INCLUDING WIRING DEVICES, EQUIPMENT POWER, STARTERS, AND DISCONNECTS
5. FIRE ALARM AND AUTOMATIC DETECTION SYSTEM
6. GROUNDING AND BONDING SYSTEM
7. DEMOLITION, DISCONNECT, AND REMOVAL OF EXISTING EQUIPMENT
8. LIGHTNING PROTECTION SYSTEM

CONDUIT INSTALLATION SCHEDULE

THE FOLLOWING SCHEDULE SHALL BE ADHERED TO UNLESS THEY CONSTITUTE A VIOLATION OF APPLICABLE CODES OR ARE NOTED OTHERWISE ON THE DRAWINGS. THE INSTALLATION OF RMC CONDUIT WILL BE PERMITTED IN PLACE OF ALL CONDUIT SPECIFIED IN THIS SCHEDULE. REFER TO CONDUIT AND BOXES SPECIFICATION 26 05 33 FOR ADDITIONAL INFORMATION.

INSTALLATION TYPE	RMC	IMC	EMT	PVC	PVC CONCRETE ENCASED	RTRC	PVC COATED RMC	HDPE	ASR
FEEDERS: SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS, MOTOR CONTROL CENTERS, ETC.		X	X						
BRANCH CIRCUITS: LIGHTING, RECEPTACLES, CONTROLS, ETC.		X	X						
MECHANICAL EQUIPMENT FEEDERS: PUMPS, CHILLERS, AIR HANDLING UNITS, ETC.		X	X						
FLOOR MOUNTED EQUIPMENT FEEDERS: PUMPS, ETC. (INCLUDE NO MORE THAN 6 FEET OF LFMC TO PUMP)		X	X						
CONTROLS (LIGHTING, POWER, BUILDING AUTOMATION, ETC.)		X	X						
WET AND DAMP LOCATIONS: (CONDUIT, BOXES, FITTINGS, INSTALLED AND EQUIPPED TO PREVENT WATER ENTRY)	X					X			
CORROSIVE LOCATIONS						X	X		
ELEVATED CONCRETE SLABS (ABOVE GRADE)	X			X					
INTERIOR LOCATIONS WITH FINISHED CEILING AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILINGS			X						
INTERIOR LOCATIONS WITHOUT FINISHED CEILINGS: CONCEALED IN WALL, EXPOSED ABOVE CEILINGS		X	X						
EXISTING INTERIOR LOCATIONS WITH FINISHED CEILINGS AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILING UNLESS OTHERWISE NOTED			X						X
UNDERGROUND / SLABS ON GRADE (IN OR UNDER SLABS ON GRADE)									
WITHIN THE PERIMETER OF THE BUILDING, UNDER SLAB ON GRADE	X			X					
WITHIN 5' OF ANY BUILDING WALL OR FOUNDATION WHEN PENETRATING THE STRUCTURAL FOUNDATION OR WALL	X				X	X			
UNDERGROUND SITE CONDUITS:									
WITHIN 5' FROM THE PERIMETER OF A BUILDING FOUNDATION	X				X	X			
5' OR GREATER FROM THE PERIMETER OF A BUILDING FOUNDATION	X			X		X			
UNDER ROADS, DRIVES, AND VEHICLE TRAVELED WAYS. WHEN HDPE DIRECTIONAL BORING IS ALLOWED: PROVIDE PRESSURIZED GROUT				X	X		X	X	
DUCTBANKS (REFER TO DUCTBANK DETAILS WHEN APPLICABLE)									
REINFORCING SHALL CONSIST OF ONE-HALF INCH DEFORMED BARS SPACED 12 INCHES ON CENTER, PARALLELING THE DUCTS ON BOTTOM, WITH ONE-HALF INCH DEFORMED TIE BARS SPACED TWELVE INCHES ON CENTERS.					X	?			
BARS SHALL OVERLAP 40 DIAMETERS AND SHALL EXTEND 5' BEYOND ROADS, DRIVES, TRAVELED WAYS, ETC.					X	?			
PROVIDE MINIMUM 3" CONCRETE COVER ON ALL SIDES OF REINFORCING.					X	?			
ENTIRE DUCTBANK SHALL BE INSTALLED ON PRECAST CONCRETE PAVERS ON 3' CENTERS.					X	?			
HAZARDOUS (CLASSIFIED LOCATIONS AS DEFIED BY THE NATIONAL ELECTRICAL CODE: COMPLETE WITH SCREWED FITTINGS AND CONDUIT SEALS	X								
FIRE RATED ASSEMBLIES: FIRE RATED ASSEMBLIES LISTED WITH PHENOLIC RTRC RACEWAY						X			
DEFINITIONS:									
CONCRETE ENCASEMENT: CONDUIT WITH A MINIMUM OF 3" THICKNESS BETWEEN THE SURFACE OF THE CONCRETE AND THE NEAREST CONDUIT. CONCRETE TO BE DOWELED INTO THE FOUNDATION.									

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PROJECT:
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SHEET NAME:
ELECTRICAL COVERSHEET

PROGRESS

DATE: **08/02/13**

CLIENT PROJ NO:

SHEET:

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1 **GENEVIEVE DIDION - SITE DEMOLITION PLAN - ELECTRICAL**
1/32" = 1'-0"

THE LINE SHOWN ABOVE IS EQUAL TO ONE INCH ON THIS SHEET (ORIGINAL PAGE SIZE)

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SITE DEMOLITION PLAN - GENEVIEVE DIDION - ELECTRICAL

PROGRESS

DATE: **04/14/26**
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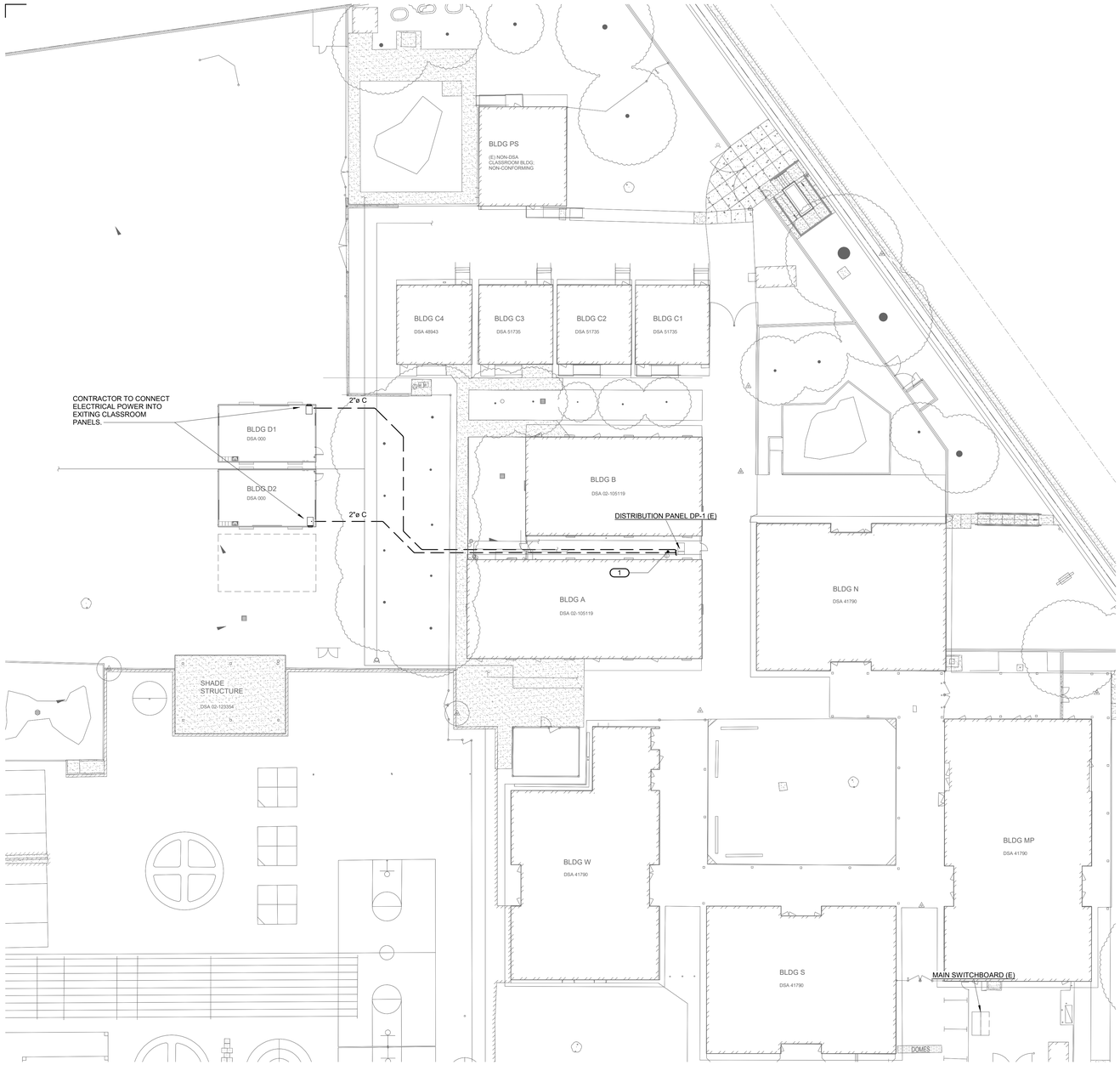

NORTH

1 SITE PLAN - ELECTRICAL NEW CONSTRUCTION

3/64" = 1'-0"

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KEYNOTES

1 PROVIDE (4) 2" CONDUITS IN COMMON TRENCH FOR POWER AND DATA SYSTEMS. TWO (2) 2" CONDUIT SHALL BE DEDICATED FOR POWER, AND TWO (2) 2" CONDUIT SHALL BE DEDICATED FOR DATA/COMMUNICATIONS. PROVIDE PULL STRING IN EACH CONDUIT. INSTALL PER APPLICABLE CEC, PROJECT SPECIFICATIONS, AND OWNER REQUIREMENTS.

NOTES

1. .
2. .
3. .

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SITE PLAN - ELECTRICAL NEW CONSTRUCTION

PROGRESS

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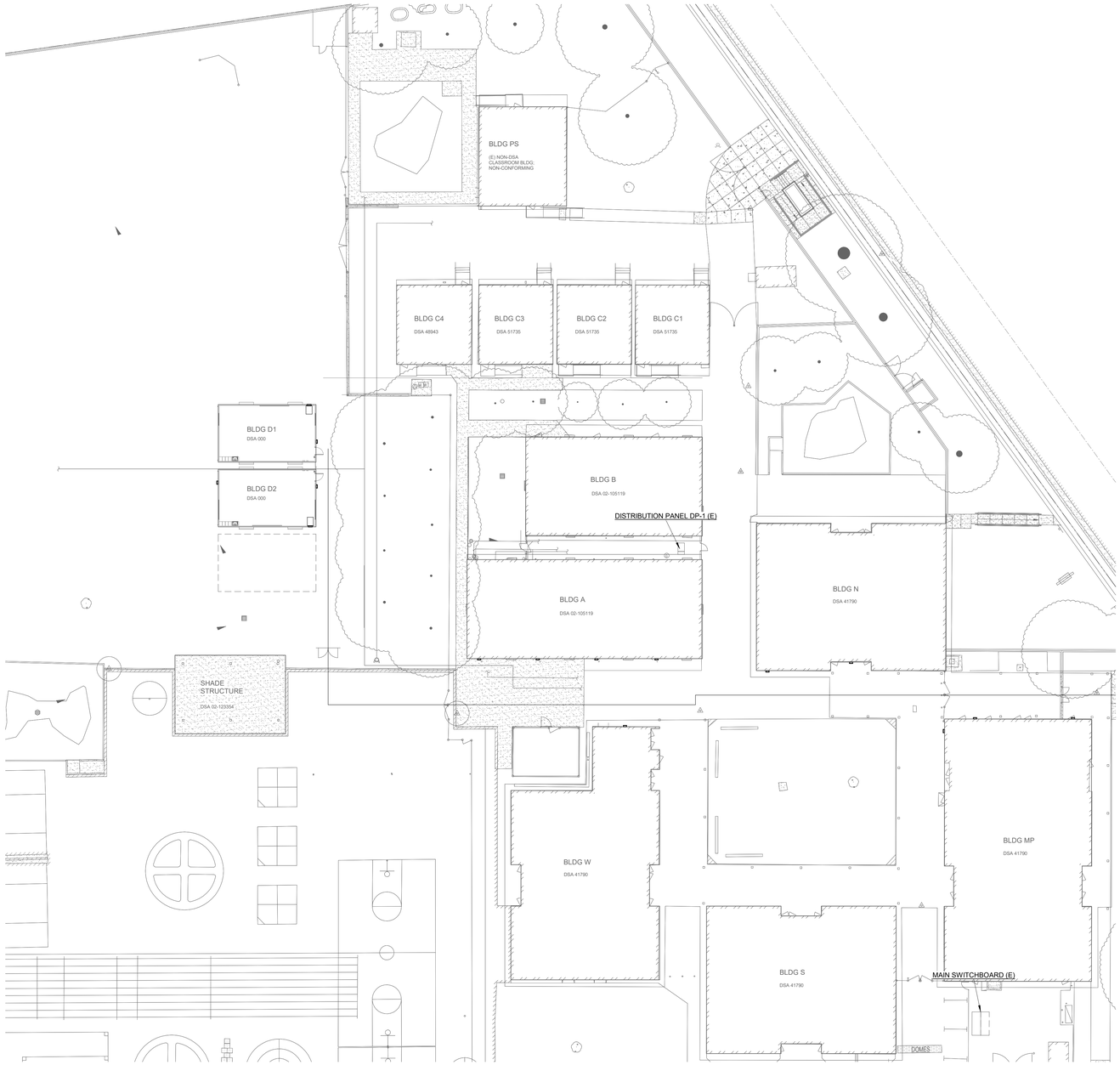
SHEET:

E2.00

Autodesk Docs://3186077000 SCUSD Abraham Lincoln TK Classroom Add R24/3186077000-MEPFT-LNCLN-TK-MOD-Classroom.rvt
4/24/2026 10:22:31 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EQUAL TO ONE INCH ON ANSI E SIZED PLANS (ARCH D SIZE)



NORTH

1 SITE PLAN - ELECTRICAL NEW CONSTRUCTION PHOTOMETRICS - EGRESS

3/64" = 1'-0"

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3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

SITE PLAN - EGRESS PHOTOMETRIC

PROGRESS

DATE: **04/14/26**

CLIENT PROJ NO:

SHEET:

E2.01

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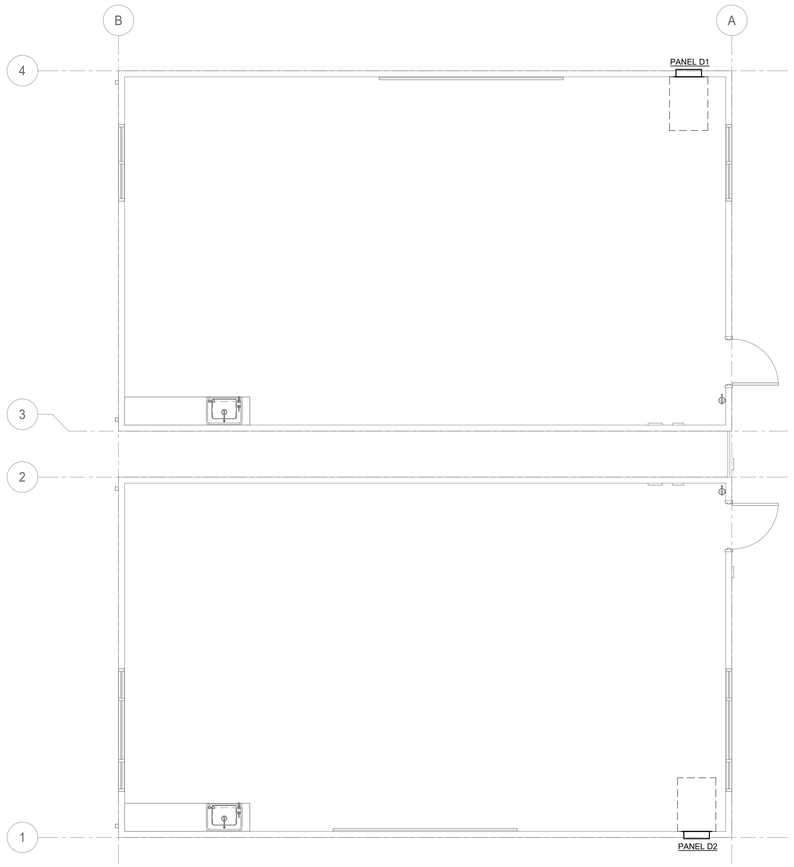
THE LINE SHOWN ABOVE IS
EQUAL TO ONE INCH ON
SHEET ORIGINALLY 22X34



NORTH

1 FLOOR PLAN - POWER NEW CONSTRUCTION

1/4" = 1'-0"

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PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

FLOOR PLAN - ELECTRICAL NEW CONSTRUCTION

PROGRESS

DATE: **04/14/26**

CLIENT PROJ NO:

SHEET:

E2.10

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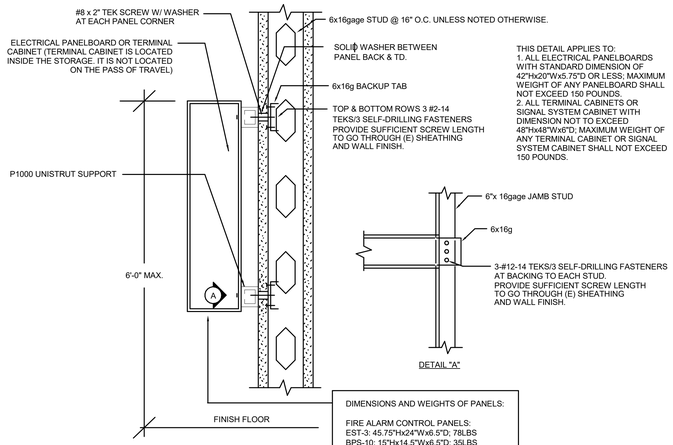
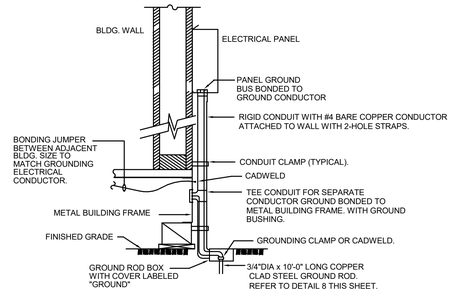


THIS DETAIL APPLIES TO:
1. ALL ELECTRICAL PANELBOARDS WITH STANDARD DIMENSION OF 42"Hx20"Wx5.75"D OR LESS; MAXIMUM WEIGHT OF ANY PANELBOARD SHALL NOT EXCEED 150 POUNDS.
2. ALL TERMINAL CABINETS OR SIGNAL SYSTEM CABINET WITH DIMENSION NOT TO EXCEED 48"Hx48"Wx6"D; MAXIMUM WEIGHT OF ANY TERMINAL CABINET OR SIGNAL SYSTEM CABINET SHALL NOT EXCEED 150 POUNDS.

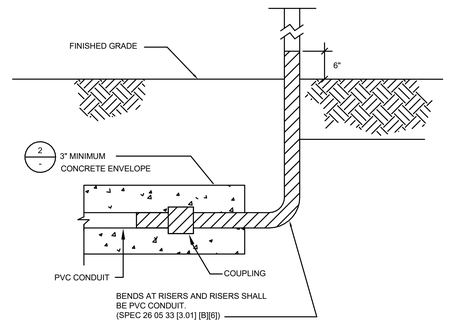
PANEL/ TERMINAL CABINET MOUNTING DETAILS — NTS — 2



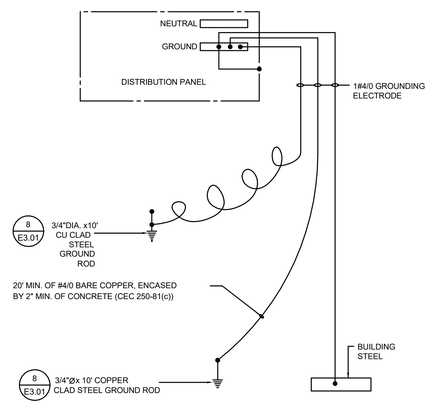
NOTES:

1. SIZE OF CONDUCTOR SHALL COMPLY WITH CEC. TABLE 250-66.
2. BOND SEPARATE CONDUCTORS FROM GROUND ROD TO ELECTRICAL PANEL AND TO METAL BUILDING FRAME (CEC. 250-50). IN ADDITION TO THE DETAIL SHOWN ABOVE. BOND THE ELECTRICAL GROUND TO METAL WATER PIPE EMBEDDED FOR AT LEAST 10 FT. IN SOIL IF AVAILABLE (CEC. 250-50 & 250-52).
3. ALL MODULES OF METAL FRAME BUILDINGS SHALL BE ELECTRICALLY BONDED TOGETHER (BOLTING ONLY IS NOT ACCEPTABLE BONDING).
4. CHECK RESISTANCE TO GROUND. IF RESISTANCE EXCEEDS 25 OHMS, INSTALL ADDITIONAL GROUND RODS SEPARATE AT LEAST 6'-0" (CEC 250-56).
5. GROUND TEST SHALL BE WITNESSED BY PROJECT INSPECTOR, AND RECORDED FOR OWNERS MANUAL.

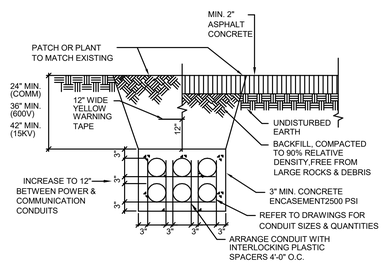
RELOCATABLE BUILDING GROUNDING DETAIL — NTS — 3



CONDUIT STUB UP DETAIL — NTS — 4

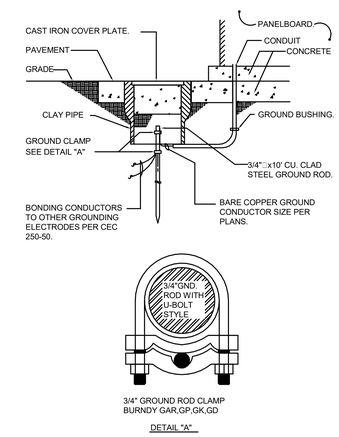


DISTRIBUTION PANEL GROUNDING DETAIL — NTS — 6



NOTE: USE 4" MINIMUM SAND CUSHION AROUND CONDUIT IF UNDERGROUND CONDUIT ROUTING IS NOT ACCESSIBLE BY CAR OR OTHER HEAVY EQUIPMENT THAT WILL DAMAGE THE UNDERGROUND CONDUITS.

UNDERGROUND CONDUIT PLACEMENT DETAIL — NTS — 7



GROUND ROD DETAIL — NTS — 8

NOT USED — NTS — 9

NOT USED — NTS — 10

NOT USED — NTS — 11

NOT USED — NTS — 12

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3324 GLENMOOR DRIVE
SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
ELECTRICAL DETAILS

PROGRESS

DATE: **04/14/26** | CLIENT PROJ NO:

SHEET:

E4.00

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EQUAL TO 1" ON ORIGINAL DRAWING. ADJUST DRAWING SCALE ACCORDINGLY

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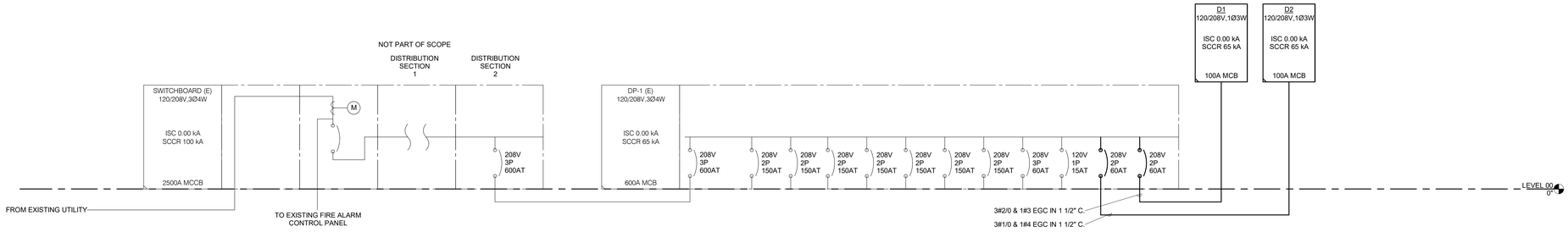
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG ON ANSI E1 PRINTS. SCALE FOR ORIGINAL DRAWING SIZE.

ELECTRICAL DISTRIBUTION SCHEDULE

ITEM	VOLTAGE	MAINS RATING / XFMR RATING	FEEDER: UPSTREAM OCPD OR TERMINATION	FEEDER: WIRE AND RACEWAY	CIRCUIT LENGTH	CONNECTED LOAD	ESTIMATED DEMAND LOAD	CONNECTED CURRENT	ESTIMATED DEMAND CURRENT	ESTIMATED ISC	SCCR	VOLTAGE DROP: FEEDERS: FEEDER VOLTAGE DROP	VOLTAGE DROP: FEEDERS: UPSTREAM FEEDERS VOLTAGE DROP	VOLTAGE DROP: FEEDERS: TOTAL FEEDER VOLTAGE DROP	VOLTAGE DROP: BRANCH CIRCUITS: MAX BRANCH VOLTAGE DROP	VOLTAGE DROP: BRANCH CIRCUITS: TOTAL VOLTAGE DROP AT MAX BRANCH	LEVEL	LOCATION	COMMENTS
D1	120/208V, 1Ø3W	100 MCB	100	3#2/0 & 1#3 EGC IN 1 1/2" C.	236'-0"	0 kVA		0		[redacted]	65 kA	1.82%	1.71%	3.53%		3.53%	LEVEL 01	CLASSROOM D1	
D2	120/208V, 1Ø3W	100 MCB	100	3#1/0 & 1#4 EGC IN 1 1/2" C.	178'-2"	0 kVA		0			65 kA	1.64%	1.71%	3.35%		3.35%	LEVEL 01	CLASSROOM D2	



1 **RISER DIAGRAM**
NO SCALE

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NOTES

PARTIAL SYSTEM NOTE
A. ONE-LINE DIAGRAM IS DIAGRAMMATIC AND PARTIAL. ONLY ELECTRICAL EQUIPMENT AND DISTRIBUTION SYSTEMS AFFECTED BY THIS PROJECT ARE SHOWN. EXISTING SYSTEMS NOT INDICATED ARE TO REMAIN UNCHANGED UNLESS OTHERWISE NOTED.

EXISTING LOAD BASIS (NEC 220.87)
A. EXISTING FEEDER AND SERVICE LOAD HAS BEEN DETERMINED USING THE MAXIMUM DEMAND DATA FROM A 1-YEAR PERIOD.
B. MAXIMUM DEMAND DATA HAS BEEN TAKEN AT 125% AND INCLUDES THE NEW LOAD TO VERIFY THAT AMPACITY OF THE SERVICE IS NOT EXCEEDED.
C. THE FEEDER HAS BEEN DETERMINED AND VERIFIED IN ACCORDANCE WITH NEC 240.4 AND THE SERVICE OVERLOAD PROTECTION HAS BEEN DETERMINED AND VERIFIED IN ACCORDANCE WITH NEC 230.90.

FIELD VERIFICATION
A. CONTACTOR SHALL FIELD VERIFY ALL EXISTING EQUIPMENT RATINGS, CONDUCTOR SIZES, AND CONNECTION CONDITIONS PRIOR TO COMMENCING WORK. NOTIFY ENGINEER OF ANY DISCREPANCIES.

SHORT CIRCUIT / AIC
A. ALL NEW EQUIPMENT SHALL HAVE A SHORT-CIRCUIT CURRENT RATING (SCCR) NOT LESS THAN THE AVAILABLE FAULT CURRENT AT THE POINT OF INSTALLATION.

COORDINATING WITH EXISTING
A. NEW WORK SHALL BE COORDINATED WITH EXISTING ELECTRICAL SYSTEMS TO MAINTAIN CONTINUITY OF SERVICE AND MINIMIZE DISRUPTION OF OCCUPIED FACILITIES.

LOAD ASSUMPTIONS
A. NEW LOADS SHOWN ARE BASED ON DESIGN ASSUMPTIONS FOR CLASSROOM AND HVAC EQUIPMENT. FINAL CONNECTIONS SHALL BE BASED ON MANUFACTUERER NAMEPLATE DATA.

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PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

ELECTRICAL DIAGRAMS

PROGRESS

DATE: **04/14/26**

CLIENT PROJ NO:

SHEET:

E5.00

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PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EQUAL TO ONE INCH (1") ON SHEET C-00 (INITIAL LAYOUT, SITE)

CALIFORNIA HCAI PIN-38
ELECTRICAL LOAD CAPACITY VERIFICATION

LOAD SUMMARY FOR: **EXISTING SWITCHBOARD**

BASED ON DEMAND LOAD PIN 38

ELECTRICAL BRANCH: **Normal**
EXISTING RATINGS: **120/208** VOLT, **3** Ø, **4** WIRE, **2500** AMPS

EXISTING DEMAND LOAD BASED ON METERING OCCURRING FROM: **02/2025** TO **01/2026**

	KVA		AMPS
EXISTING DEMAND LOAD (BASED ON LOAD...	**175**	/	486
EXISTING DEMAND LOAD X 125%	219	/	608
EXISTING LOAD REMOVED **(DESCRIPTION)**	**0**	/	0
NEW LOAD ADDED:			
D1 - CLASSROOM	**10**		
D2 - CLASSROOM	**10**		
TOTAL NEW LOAD ADDED	20	/	56
NET LOAD CHANGE	20	/	56
TOTAL LOAD OF EXISTING PANEL	239	/	664

EXISTING ELECTRICAL EQUIPMENT HAS SUFFICIENT CAPACITY TO ACCOMMODATE NEW LOAD ADDED

NOTE: THE LEVEL ONE AND TWO PANELS, FEEDERS, AND FEEDER OVERCURRENT PROTECTIVE DEVICES HAVE BEEN CHECKED AND SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN MAIN SWITCHBOARD

CALIFORNIA HCAI PIN-38
ELECTRICAL LOAD CAPACITY VERIFICATION

LOAD SUMMARY FOR: **EXISTING DISTRIBUTION PANEL DP-1**

BASED ON DEMAND LOAD PIN 38

ELECTRICAL BRANCH: **Normal**
EXISTING RATINGS: **120/208** VOLT, **3** Ø, **4** WIRE, **600** AMPS

EXISTING DEMAND LOAD BASED ON EXISTING CONDITION REVIEW

	KVA		AMPS
EXISTING DEMAND LOAD (BASED ON LOAD...	**85**	/	236
EXISTING DEMAND LOAD X 125%	107	/	295
EXISTING LOAD REMOVED **(DESCRIPTION)**	**0**	/	0
NEW LOAD ADDED:			
D1 - CLASSROOM	**10**		
D2 - CLASSROOM	**10**		
TOTAL NEW LOAD ADDED	20	/	56
NET LOAD CHANGE	20	/	56
TOTAL LOAD OF EXISTING PANEL	127	/	351

EXISTING ELECTRICAL EQUIPMENT HAS SUFFICIENT CAPACITY TO ACCOMMODATE NEW LOAD ADDED

NOTE: THE LEVEL ONE AND TWO PANELS, FEEDERS, AND FEEDER OVERCURRENT PROTECTIVE DEVICES HAVE BEEN CHECKED AND SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN MAIN SWITCHBOARD AND DISTRIBUTION PANEL (DP-1).

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SHEET NAME:
ELECTRICAL PANEL SCHEDULES

PROGRESS

DATE: **04/14/26**
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THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON ANSI E SHEET ORIGINAL PAPER SIZE

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED. SPECIFIC TO THE SHEET AND/OR DETAIL

INDICATES DIRECTION OF TRUE NORTH
PLAN OR DETAIL NUMBER
PLAN OR DETAIL NAME
VIEW NAME
1/8" = 1'-0"
PLAN OR DETAIL SCALE
NORTH

SIM — INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS
1 — DETAIL REFERRED TO BY SECTION CUT
M101 — SHEET DETAIL IS LOCATED ON — T101

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
NEW
EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN
EXISTING (NARROW LINE PATTERN)
EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

WORK BY OTHERS (NARROW LINE)
WORK BY OTHERS (NARROW LINE)
EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-(E) TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

'TAG'-(R) TAGS WITH DASH 'R' INDICATES THE REFERENCED OBJECT IS REMOVED

TAG-1 UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

MANDATORY ACCEPTANCE TESTING:

CONTRACTOR SHALL PROVIDE CALIFORNIA CERTIFIED ACCEPTANCE TEST PERSONNEL, COMPLETE ACCEPTANCE TESTING FORMS, AND SUBMIT THE FORMS TO THE AUTHORITY HAVING JURISDICTION **[PRIOR TO PROJECT COMMISSIONING ACTIVITIES.]**
NTC: IF PROJECT HAS COMMISSIONING, KEEP BRACKETED STATEMENT.
MANDATORY ACCEPTANCE TESTING PER CALIFORNIA ENERGY CODE SHALL BE PROVIDED AS LISTED BELOW:

NOTE: DIVISION 23 CONTRACTOR WILL RETAIN A CERTIFIED ACCEPTANCE TEST TECHNICIAN (ATT) TO PERFORM AND DOCUMENT THE REQUIRED ACCEPTANCE TESTING AS DESCRIBED IN THE LATEST NON-RESIDENTIAL COMPLIANCE MANUAL. THIS WORK INCLUDES COMPLETING THE FORMS, SIGNING THE FORMS, AND SUBMITTING THE FORMS TO THE AUTHORITY HAVING JURISDICTION. THE FORMS AND REQUIREMENTS CAN BE OBTAINED FROM THE CEC WEBSITE. INCLUDE FORMS WHICH APPLY TO THE SCOPE OF WORK IN THIS SET OF DRAWINGS AND SPECIFICATIONS. THE LIST OF FORMS IS REFERENCED BELOW:
NTC: UPDATE THE FOLLOWING LIST TO SUIT YOUR PROJECT.
1. NRCA-MCH-02-A OUTDOOR AIR ACCEPTANCE
2. NRCA-MCH-03-A CONSTANT VOLUME, SINGLE ZONE, UNITARY (PACKAGED AND SPLIT) AC & HEAT PUMP SYSTEMS
3. NRCA-MCH-04-H AIR DISTRIBUTION DUCT LEAKAGE
4. NRCA-MCH-05-A AIR ECONOMIZER CONTROLS ACCEPTANCE
5. NRCA-MCH-06-A DEMAND CONTROL VENTILATION (DVC) SYSTEMS ACCEPTANCE
6. NRCA-MCH-07-A SUPPLY FAN VARIABLE FLOW CONTROLS (VFC) ACCEPTANCE
7. NRCA-MCH-08-A VALVE LEAKAGE TEST
8. NRCA-MCH-09-A WATER TEMP RESET
9. NRCA-MCH-10-A HYDRONIC SYSTEM VARIABLE FLOW CONTROL ACCEPTANCE
10. NRCA-MCH-11 AUTOMATIC DEMAND SHED CONTROLS
11. NRCA-MCH-12-A FAULT DETECTION AND DIAGNOSTICS (FDD) FOR PACKAGED DX UNITS
12. NRCA-MCH-13-A AIR HANDLING UNIT AND ZONE TERMINAL FDD
13. NRCA-MCH-14-A ENERGY STORAGE FOR A/C – DISTRIBUTED ENERGY STORAGE DX AX SYSTEMS
14. NRCA-MCH-15-A THERMAL ENERGY STORAGE
15. NRCA-MCH-16-A SUPPLY AIR TEMPERATURE RESET CONTROLS
16. NRCA-MCH-17-A CONDENSER WATER TEMPERATURE RESET CONTROLS
17. NRCA-MCH-18 ENERGY MANAGEMENT SYSTEM ACCEPTANCE
18. NRCA-MCH-19-A OCCUPIED STANDBY
19. NRCA-MCH-20a-H MULTI-FAMILY (MF) DWELLING VENTILATION
20. NRCA-MCH-20b-H MF DWELLING KITCHEN EXHAUST
21. NRCA-MCH-20c-H MF INDOOR AIR QUALITY VENTILATION SYSTEM
22. NRCA-MCH-20d-H MF DWELLING VENTILATION – HRV-ERV
23. NRCA-MCH-21-A MF ENVELOPE LEAKAGE
24. NRCA-MCH-22-A SYSTEM DUCT LEAKAGE
25. NRCA-MCH-23-A HRV-ERV VERIFICATION
26. NRCA-PRC-01-F COMPRESSED AIR SYSTEM CONTROLS

[NTD: ADD FOR CALIFORNIA OSHPD PROJECTS]

HCAI SUPPORT/BRACING OF PIPES/DUCTS & CONDUITS:

PIPE, DUCTS, CONDUITS SHALL BE SUPPORTED AND BRACED PER HCAI PRE-APPROVAL OF MANUFACTURERS CERTIFICATION (OPM) (OPM-0043-13, MASON INDUSTRIES INC. SEISMIC BRACING SYSTEM), IF THE CONSTRUCTION DOCUMENT PROVIDES SUPPORT SYSTEM OTHER THAN THE MENTIONED ABOVE, CALCULATION AND COMPLETE DETAILS FOR THE PROPOSED SYSTEM SHALL BE SUBMITTED TO HCAI FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND INSTALLATION.

A. LAYOUT DRAWING OF SUPPORTS, ATTACHMENTS, AND BRACING SYSTEMS IN ACCORDANCE WITH THE PRE-APPROVAL SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL (RDP) IN RESPONSIBLE CHARGE OF THE PROJECT FOR REVIEW TO VERIFY THAT THE DETAILS ARE IN CONFORMANCE WITH THE CODE REQUIREMENTS. THE LAYOUT DRAWINGS SHALL AS A MINIMUM SATISFY THE REQUIREMENTS OF ASCE 7 SECTION 13.6 AS MODIFIED BY THE CBC 2025 SECTION 1616A.
   a. THE STRUCTURAL ENGINEER OF RECORD (SEOR) SHALL VERIFY THAT THE SUPPORTING STRUCTURE IS ADEQUATE FOR THE FORCES IMPOSED ON IT BY THE SUPPORTS, ATTACHMENTS, AND BRACES INSTALLED IN ACCORDANCE WITH THE PRE-APPROVAL IN ADDITION TO ALL OTHER LOADS.
   b. THE SEOR SHALL FORWARD THE SUPPORTS, ATTACHMENTS, AND BRACING DRAWINGS (INCLUDING APPROVED AMENDED CONSTRUCTION DOCUMENTS FOR SUPPLEMENTARY FRAMING WHERE REQUIRED) TO THE DISCIPLINE IN RESPONSIBLE CHANGE WITH A NOTATION INDICATING THAT THE DRAWINGS HAVE BEEN REVIEWED AND ARE IN GENERAL CONFORMANCE WITH THE PRE-APPROVAL AND THE DESIGN OF THE PROJECT.
   c. A "SHOP DRAWING STAMP" MAY BE USED TO INDICATE COMPLIANCE WITH THIS REQUIREMENT.
   d. THE REGISTERED DESIGN PROFESSIONAL (RDP), OTHER THAN (SEOR), MAY PROVIDE THE SHOP DRAWING STAMP FOR SMALL PROJECTS AT THE DISCRETION OF THE HCAI DISTRICT STRUCTURAL ENGINEER.
B. THE SEOR SHALL DESIGN ANY SUPPLEMENTARY FRAMING THAT IS NEEDED TO RESIST THE LOADS, MAINTAIN STABILITY AND/OR IS REQUIRED FOR INSTALLATION OF PRE-APPROVED SYSTEM.
   a. THE SUPPLEMENT FRAMING SHALL BE SUBMITTED TO HCAI AS AN AMENDED CONSTRUCTION DOCUMENTS (ACD).
C. THE LAYOUT DRAWINGS (WITH THE SHOP DRAWING STAMP) SHALL BE SUBMITTED TO THE HCAI TO REVIEW:
   1. STRUCTURE SUPPORTING THE DISTRIBUTION SYSTEM HAS ADEQUATE CAPACITY;
   2. SEISMIC DESIGN FORCES (Fp) ARE IN ACCORDANCE WITH THE CBC 2025, AND
   3. VERIFY THAT SUBMITTAL IS WITHIN THE SCOPE OF HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)
      a. SIZE OF DISTRIBUTION SYSTEM COMPONENTS
      b. SPACING OF BRACING AND FLEX JOINTS, AND
      c. SUBSTRATE FOR ATTACHMENTS
D. THE LAYOUT DRAWINGS (WITH THE SHOP DRAWING STAMP) SHALL BE KEPT ON THE JOBSITE AND CAN BE USED FOR INSTALLATION OF THE SUPPORT AND BRACING.
   a. HCAI FILED STAFF WILL REVIEW THE INSTALLATION.
E. A COPY OF THE CHOSEN BRACING SYSTEM(S) INSTALLATION GUIDE/OPM MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING THE INSTALLATION OF HANGERS AND/OR BRACES.
   a. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COPIES OF OPM AND FURNISH THE IOR WITH ONE COPY OF EACH.
F. COMPONENTS OF TWO OR MORE PRE-APPROVED BRACING SYSTEM SHALL NOT BE MIXED.
   a. ONLY ONE PRE-APPROVED BRACING SYSTEM MAY BE USED FOR A RUN OF PIPE, DUCT, OR CONDUIT.
   b. ANY SUBSTITUTION OF COMPONENT OF AN OPM SYSTEM SHALL REQUIRE HCAI REVIEW AND APPROVAL.

REFERENCE: 2025 CAC SECTIONS 7-115, 7-126,7-153, AND CBC 2025 SECTION 107

APPLICABLE CODES AND STANDARDS:

[2025] CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 1

[2025] CALIFORNIA BUILDING CODE (CBC)
CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 2
(2021 INTERNATIONAL BUILDING CODE (IBC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA ELECTRICAL CODE (CEC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 3
(2020 NATIONAL ELECTRICAL CODE (NEC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA MECHANICAL CODE (CMC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 4
(2021 UNIFORM MECHANICAL CODE (UMC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA PLUMBING CODE (CPC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 5
(2021 UNIFORM MECHANICAL CODE (UPC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA ENERGY CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 6

[2025] CALIFORNIA HISTORICAL BUILDING CODE (CHBC)
CALIFORNIA CODE OF REGULATIONS (CHBC) TITLE 24, PART 8

[2025] CALIFORNIA FIRE CODE (CFC)
CALIFORNIA CODES OF REGULATIONS (CRR) TITLE 24, PART 9
(2021 INTERNATIONAL FIRE CODE (IFC) W/ 2022 CALIFORNIA AMENDMENTS)

[2025] CALIFORNIA EXISTING BUILDING CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 10
(2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC))

[2025] CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)
CALIFORNIA CODES OF REGULATIONS (CCR) TITLE 24, PART 11

[2025] CALIFORNIA REFERENCED STANDARDS CODE
CALIFORNIA DOE OF REGULATIONS (CCR) TITLE 24, PART 12

AMERICANS WITH DISABILITIES ACT (ADA)
TITLE II - ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAG)
1990 STATE FIRE MARSHAL REGULATIONS AND AMENDMENTS TO-DATE

CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, CALIFORNIA STATE ACCESSIBILITY STANDARDS CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 19

NFPA 13 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS **[2025]** EDITION (CA AMENDED)

NFPA 14 STANDARDS FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS **[2019]** EDITION
(CA AMENDED)

NFPA 17 STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS **[2021]** EDITION

NFPA 17A STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS **[2017]** EDITION

NFPA 20 STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION **[2019]** 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 **[2019]** EDITION (CA AMENDED)

NFPA 54 NATIONAL FUEL GAS CODE **[2018]** EDITION (CA AMENDED)

NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE **[2022]** EDITION (CA AMENDED)

NFPA 80 STANDARD FOR FIRE DOORS AND OTHER OPENINGS PROTECTIVES **[2019]** EDITION

NFPA 90A STANDARD FOR INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS **[2018]** EDITION (CA AMENDED)

NFPA 99 HEALTHCARE FACILITIES CODE **[2021]** EDITION (CA AMENDED)

NFPA 418 STANDARD FOR HELIPORTS **[2016]** EDITION (CA AMENDED)

NFPA 2001 STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS **[2018]** EDITION (CA AMENDED)

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]** (R2012)

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CALIFORNIA BUILDING CODE (CBC) CHAPTER 35 AND CALIFORNIA FIRE CODE (CFC) CHAPTER 80

CALIFORNIA DSA MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENT ANCHORAGE NOTES:

1. EQUIPMENT ANCHORAGE NOTE:
   ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2025 CBC, SECTION 1617A.18 THROUGH 1617A.1.26 AND ASCE 7-22 CHAPTERS 13,26, AND 30.

   1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTION EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   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 APPROVED BY DSA.

   THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT 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 SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

2. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS BRACING NOTE.

   PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-22 SECTION 13.3 AS DEFINED INS ASCE 7-22 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2025 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.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. HCAI OPM FOR 2013 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)M ELECTRICAL DISTRIBUTION SYSTEMS (E):

[NTD: ADD FOR ALL CALIFORNIA JURISDICTIONS]

SCOPE OF WORK NOTES:

THE FOLLOWING IS A BRIEF SCOPE OF WORK FOR [PIPING]|VENTILATION| [PLUMBING]|FIRE PROTECTION|<INSERT> CONTRACTOR. WORK SHALL INCLUDE, BUT IS NOT NECESSARILY LIMITED TO:
[NOTE TO SPECIFIER: CUSTOM EDIT SCOPE FOR PROJECT IF USED; **OR USE THE SCOPE DESCRIPTION IN THE #00500 SPECIFICATIONS.**
EXAMPLE:
1. WATER SERVICE AND METERING.
2. PLUMBING DOMESTIC HOT, COLD, HOT WATER CIRC TO ALL FIXTURES.
3. PLUMBING FIXTURES.
4. WATER HEATERS.]
[NTD: CUSTOM EDIT SCOPE FOR PROJECT IF USED]

[NTD: ADD FOR CALIFORNIA PROJECTS]

1. ALL FIRE PROTECTION SYSTEMS WORK SHALL BE PROVIDED BY A DESIGN BUILD CONTRACT BY A LICENSED C16 CONTRACTOR.
2. ALL WORK AND MATERIAL SHALL COMPLY WITH THE LATEST CALIFORNIA BUILDING CODE, CALIFORNIA FIRE CODES, NFPA 13, 20, 24, 72, 75, AND 101, CALIFORNIA STATE FIRE MARSHAL, AND APPLICABLE LOCAL CODES, AMENDMENTS AND REQUIREMENTS.

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	----
MECHANICAL	----
ELECTRICAL	----
TECHNOLOGY	----
MEDICAL EQUIPMENT	----
ACOUSTICAL	----

NTD: DELETE THIS ITEM IF NOT REQUIRED BY PROJECT MANAGER

FIRE PROTECTION ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
I.E.	INVERT ELEVATION
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
SCCR	SHORT CIRCUIT CURRENT RATING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

DETAIL/DIAGRAM SYMBOLS - FIRE PROTECTION

SYMBOL	DESCRIPTION

SYMBOL LIST - FIRE PROTECTION

SYMBOL	DESCRIPTION

SYMBOL LIST - FIRE PROTECTION SYSTEMS

SYMBOL	DESCRIPTION

SYMBOL LIST - FIRE HAZARD ZONES

SYMBOL:	DESCRIPTION:
	FIRE ZONE BOUNDARY
NO HATCH	LIGHT HAZARD
	ORDINARY GROUP 1
	ORDINARY GROUP 2
	EXTRA GROUP 1
	EXTRA GROUP 2
	DEMOLITION

[NTD: REPLACE GENERAL NOTES WITH THESE IF IMEG DOES FULL HYDRAULIC DESIGN]

FIRE PROTECTION GENERAL NOTES "FULL DESIGN":

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER IS THE BASIS OF DESIGN.
3. CENTER SPRINKLERS IN CEILING TILES IN BOTH DIRECTIONS IN ALL AREAS. IN AREAS WITH 2'X4' CEILING TILES CENTERING USING A 2'X2' CEILING PATTERN IS ACCEPTABLE. SPRINKLER HEADS SHALL BE ALIGNED WITH OTHER SPRINKLER HEADS, LIGHTING, DIFFUSERS, AND ANY OTHER FEATURES IN THE CEILING.
4. NEW SPRINKLERS SHALL BE QUICK RESPONSE TYPE, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL NOT MIX STANDARD RESPONSE SPRINKLERS WITH QUICK RESPONSE SPRINKLERS IN UNPARTITIONED SPACES. **INTD: COORDINATE NOTE WITH PROJECT AND FM REQUIREMENTS]**
5. PROVIDE COVERAGE ABOVE AND BELOW ALL EXPOSED DUCTWORK GREATER THAN 48" WIDE.
6. PROVIDE COVERAGE ABOVE (IF APPLICABLE) AND BELOW FLOATING CEILINGS, REFER TO ARCHITECTURAL PLANS.
7. HYDRAULIC CALCULATIONS HAVE BEEN PROVIDED FROM THE WATER SOURCE TO THE MOST HYDRAULICALLY REMOTE AREA. NEW CALCULATIONS WILL BE REQUIRED IF PIPING WITHIN THE HYDRAULIC CALCULATED AREA ARE MODIFIED FROM THE APPROVED DOCUMENTS.
8. PROVIDE RISER ROOM IDENTIFICATION SIGNAGE OUTSIDE THE FIRE RISER ROOM. COORDINATE EXACT SIGN LANGUAGE WITH AHJ.
9. RISERS SHALL BE SUPPORTED BY RISER CLAMPS OR BY HANGERS LOCATED ON THE HORIZONTAL CONNECTIONS WITHIN 24" OF THE CENTERLINE OF THE RISER.
10. RISER CLAMPS ANCHORED TO WALLS USING HANGER RODS IN THE HORIZONTAL POSITION SHALL NOT BE PERMITTED TO VERTICALLY SUPPORT RISERS.
11. SUPPORTS ABOVE THE LOWEST LEVEL SHALL RESTRAIN THE PIPE TO PREVENT MOVEMENT BY AN UPWARD THRUST WHERE FLEXIBLE FITTINGS ARE USED.
12. WHERE RISERS ARE SUPPORTED FROM THE GROUND, THE GROUND SUPPORT SHALL CONSTITUTE THE FIRST LEVEL OF RISER SUPPORT.
13. PIPE LENGTHS SHOWN ON DRAWINGS ARE NOMINAL (CENTER TO CENTER DIMENSIONS).
14. WHERE FEASIBLE INSTALL PIPES HIGH AS POSSIBLE TO AVOID CONFLICT WITH OTHER DISCIPLINES, AND TO REDUCE THE AMOUNT OF REQUIRED ROD STIFFENER SUPPORTS.
15. INSTALL SYSTEM DRAINS AT LOW POCKET AREAS CONTAINING FIVE GALLONS OF WATER OR MORE, PROVIDE WITH ISOLATION VALVE AND THREADED HOSE CONNECTION.
16. MAIN PIPING PASSING BELOW SKYLIGHTS OR CLERESTORIES ARE NOT PERMITTED.
17. FOLLOW STRUCTURAL DETAILS WHEN PENETRATING OR PASSING THROUGH STRUCTURAL ELEMENTS. ALTERNATE DESIGNS WILL NEED TO BE APPROVED THROUGH THE STRUCTURAL ENGINEER.
18. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLER HEADS WHERE REQUIRED BY **[NFPA 13] [FM]** UNLESS OTHERWISE NOTED.
19. FINAL HEAD LOCATION, TYPE AND FINISH SHALL BE REVIEWED AND APPROVED BY THE ARCHITECT.
20. A GRAPHIC ANNUNCIATOR PANEL SHALL BE PROVIDED TO INCLUDE AREAS BEING PROVIDED WITH A PRE-ACTION OR CLEAN AGENT SYSTEM WHICH HAVE CONCEALED AREAS.
21. EXACT LOCATION OF THE ALL PANELS SHALL BE VERIFIED ON SITE AND COORDINATED WITH THE ELECTRICAL CONTRACTOR.
22. PAINT ALL EXPOSED PIPING TO MATCH BACKGROUND OR AS DIRECTED BY THE ARCHITECT.
23. THE OWNER MUST BE NOTIFIED PRIOR TO EACH AND EVERY DRAINING OR RECHARGING OF THE SPRINKLER SYSTEM.
24. THE CONTRACTOR SHALL PREPARE A COORDINATED SET OF SHOP DRAWINGS AND SHALL OBTAIN APPROVAL FROM THE AUTHORITIES HAVING JURISDICTION AND THE LOCAL FIRE DEPARTMENT PRIOR TO ANY INSTALLATION.
25. **[NTD: KEEP IF PIPE IS SUBJECT TO SEISMIC FORCES]** WHERE PIPE PASSES THROUGH HOLES IN PLATFORMS, FOUNDATIONS, WALL, OR FLOORS, THE HOLES SHALL BE SIZED SUCH THAT DIAMETER OF THE HOLE IS NOMINALLY 2 INCHES LARGER THAN THE PIPE FOR 1" NOMINAL TO 3 ½" NOMINAL AND 4" LARGER THAN THE PIPE FOR PIPE 4" AND LARGER.
26. **[CALIFORNIA CODE TITLE 19 ARTICLE 906(a):]** A LABEL OF THE SELF–ADHESIVE TYPE SHALL BE PLACED ON THE FIRE DEPARTMENT CONNECTION OR ON THE RISER FOR FIRE SPRINKLER SYSTEM AND SHALL INCLUDE DATE OF INSTALLATION AND/OR DATE SERVICE WAS PERFORMED AND LICENSE NUMBER OF PERSON PERFORMING SERVICE WORK.
27. DRAWINGS SHOW LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC. AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
28. DO NOT SCALE OTHER DISCIPLINE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS. INCLUDING THOSE OF OTHER TRADES.

[NTD: ADD FOR CALIFORNIA DSA PROJECTS]

DIVISION OF STATE ARCHITECT NOTES:

1. A FIRE WATCH SHALL BE IMPOSED IN-CAMPUS WHEN ANY EXISTING CAMPUS FIRE ALARM AND/OR AUTOMATIC FIRE SPRINKLER SYSTEM IS IMPAIRED. FIRE WATCH PERSONNEL SHALL BE PROVIDED WITH AT LEAST ONE APPROVED MEANS FOR NOTIFICATION OF THE FIRE DEPARTMENT AND THEIR SOLE DUTY SHALL BE TO PERFORM CONSTANT PATROL AND WATCH FOR THE OCCURRENCE OF FIRE. CFC CHP. 33.
2. ARCHITECT OF RECORD , MECHANICAL ENGINEER & FIRE PROTECTION CONTRACTOR (C-16) SHALL AFFIX THEIR SEAL, STAMP AND SIGN ALL SUBMITTALS, OR PROVIDE DOCUMENTATION PER DSA IR A-18.
3. SPRINKLER CONTRACTOR SHALL COMPLETE AND SIGN CONTRACTORS MATERIAL & TEST CERTIFICATE FOR THE ABOVEGROUND PIPING. THIS FORM SHALL BE GIVEN TO THE PROJECT INSPECTOR WHO WILL FORWARD TO DSA FOR FILLING IN PROJECT RECORDS.
4. SPRINKLER FLOW SWITCH SHALL BE TESTED TO CONFIRM THAT WHEN THE INSPECTORS TEST VALVE IS ACTIVATED AN ALARM WILL SOUND NO MORE THAN 90 SECONDS AFTER INITIAL FLOW (WITNESSED BY THE PROJECT INSPECTOR).
5. THE MAIN FIRE ALARM PANEL VALVE MONITORING AND WATER-FLOW ALARM AND TROUBLE SIGNALS SHALL BE DISTINCTLY DIFFERENT AND SHALL BE AUTOMATICALLY TRANSMITTED TO AN APPROVED CENTRAL STATION MONITORING COMPANY.
6. THE FLOW SWITCH SHALL BE CONNECTED TO A 10" OUTSIDE ALARM BELL OR OTHER AUDIBLE ALARM DEVICE AT EACH RISER. APPROVED IDENTIFICATION SIGNS SHALL BE PROVIDED ON THE OUTSIDE ALARM BELL "SPRINKLER FIRE ALARM-WHEN ALARM SOUNDS CALL 911/FIRE DEPARTMENT".

FIRE PROTECTION SHEET INDEX

FA0.00	FIRE ALARM COVERSHEET
FA1.00	SITE DEMOLITION PLAN - GENEVIEVE DIDION - FIRE ALARM
FA2.00	SITE PLAN -FIRE ALARM NEW CONSTRUCTION
FA2.10	FLOOR PLAN - FIRE ALARM NEW CONSTRUCTION
FA4.00	FIRE ALARM DETAILS
FA5.00	FIRE ALARM DIAGRAMS
GRAND TOTAL: 6	

AGENCY APPROVAL:

REVIEWING AG

1 **SITE DEMOLITION PLAN - GENEVIEVE DIDION - FIRE ALARM**
1/32" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

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ISSUE

Δ	DESCRIPTION	DATE

NOTES

1. EXISTING PORTABLE CLASSROOM FA CIRCUIT TO BE DISCONNECTED. EXISTING FA CABLES TO BE REMOVED BACK TO MAIN SYSTEM FACP. EXISTING CONDUIT IN EXISTING PORTABES TO REMAIN AND PROTECTED. TERMINATE CONDUIT AT PORTABLE CLASSROOM DISCONNECTION POINT. FIELD VERIFY EXACT LOCATION.

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SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
SITE DEMOLITION PLAN - GENEVIEVE DIDION - FIRE ALARM

PROGRESS

DATE: **04/14/26**
CLIENT PROJ NO:
SHEET:

FA1.00

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG ON THIS SHEET ORIGINALLY 22X34.
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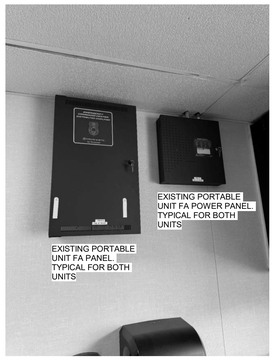
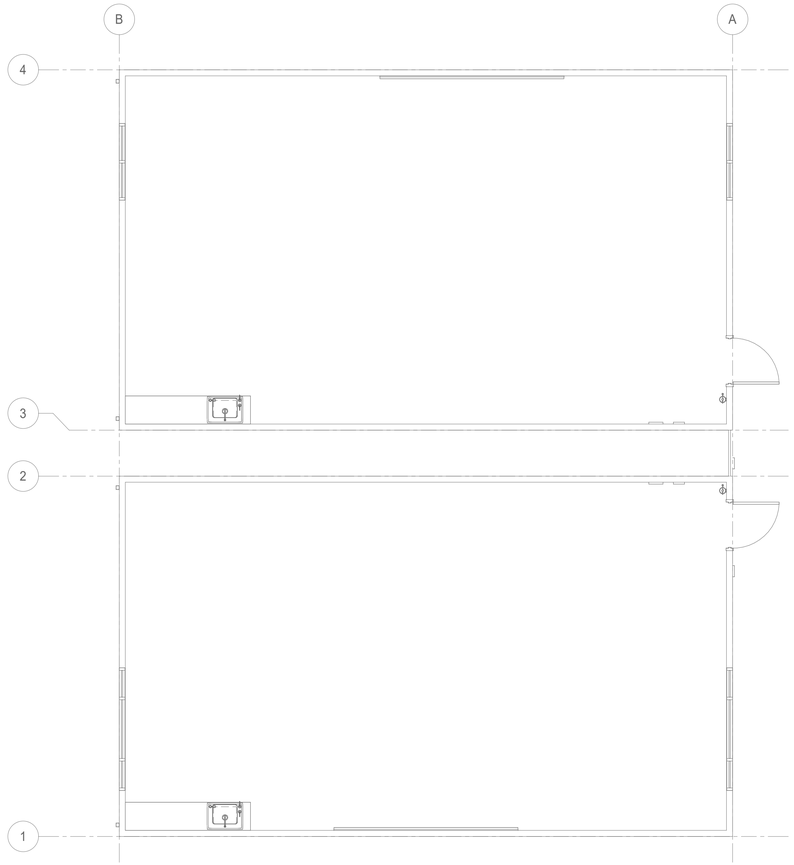
THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON ANSI D SHEET (ORIGINAL SIZE)





1 FLOOR DEMOLITION PLAN - FIRE ALARM

1/4" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

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ISSUE

Δ	DESCRIPTION	DATE

NOTES

1. EXISTING PORTABLE CLASSROOM FIRE ALRAM DEVICES AND TERMINAL CABINETS TO BE REMOVED. FIELD VERIFY EXACT LOCATION.
2. EXISTING PORTABLE CLASSROOM FA CIRCUIT TO BE DISCONNECTED. EXISTING FA CABLES TO BE REMOVED BACK TO MAIN SYSTEM FACP. EXISTING CONDUIT IN EXISTING PORTABES TO REMAIN AND PROTECTED. TERMINATE CONDUIT AT PORTABLE CLASSROOM DISCONNECTION POINT. FIELD VERIFY EXACT LOCATION.

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SACRAMENTO, CA 95827

PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

FLOOR DEMOLITION PLAN - FIRE ALARM

PROGRESS

DATE: **04/14/26**

CLIENT PROJ NO:

SHEET:

FA1.10

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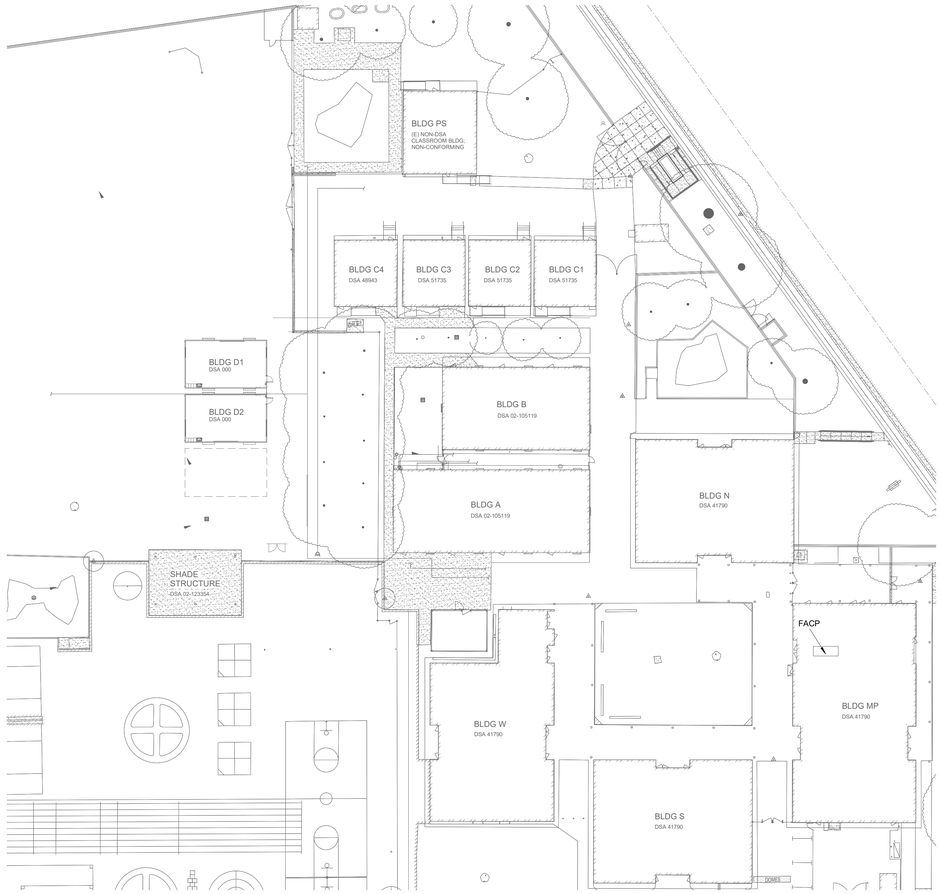
SHEET ORIGINALLY 22x34



NORTH

1 SITE PLAN -FIRE ALARM NEW CONSTRUCTION

1" = 30'-0"

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KEYNOTES

NOTES

1. NEW CLASSROOM FIRE ALARM EQUIPMENT SHALL BE INTERFACED WITH THE EXISTING FIRE ALARM SYSTEM THROUGH EXISTING COMPATIBLE SYSTEM PATHWAYS AS INDICATED ON THE FIRE ALARM RISER DIAGRAM. CONNECTION TO NEAREST EXISTING CIRCUIT SHALL BE PERMITTED ONLY WHERE CIRCUIT TYPE, SYSTEM COMPATIBILITY, PATHWAY CLASSIFICATION, LOAD CAPACITY, AND SUPERVISION REQUIREMENTS ARE MAINTAINED. PROVIDE ALL REQUIRED CONTROL/MONITOR MODULES, REMOTE POWER SUPPLIES, BATTERIES, AND TROUBLE/ALARM SUPERVISION PER MANUFACTURER'S LISTING AND APPROVED FIRE ALARM SUBMITTALS.

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SITE PLAN -FIRE ALARM NEW CONSTRUCTION

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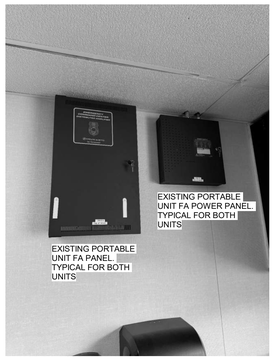

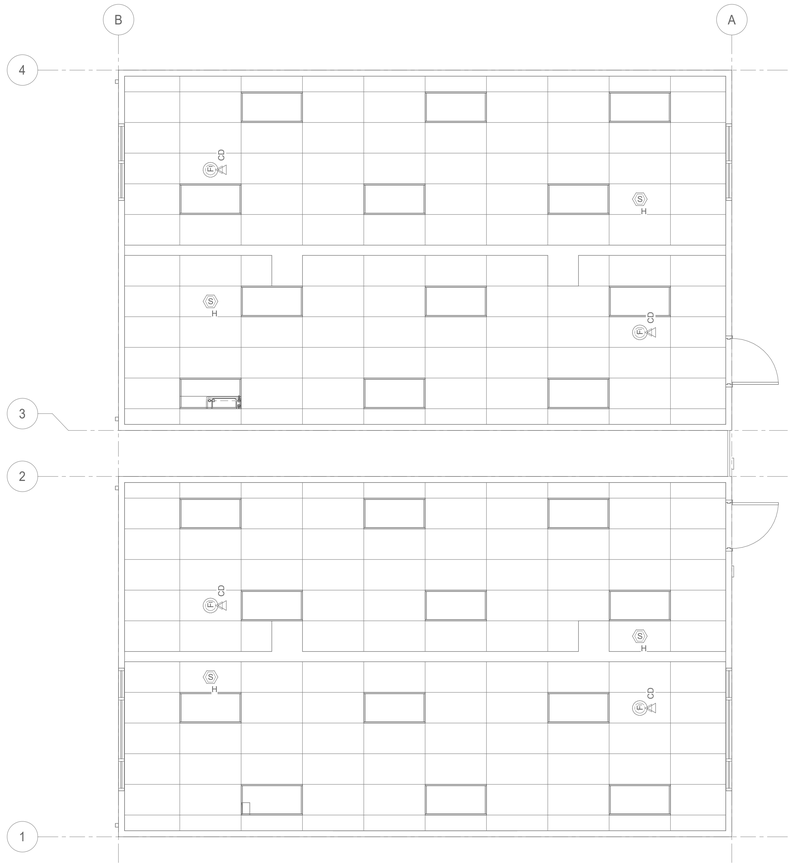

NORTH

1 FLOOR PLAN - FIRE ALARM NEW CONSTRUCTION

1/4" = 1'-0"

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KEYNOTES

NOTES

1. EXISTING CLASSROOM ECC (EMERGENCY COMMAND CENTER) EQUIPMENT SHALL BE FIELD VERIFIED BY THE FIRE ALARM CONTRACTOR AND SYSTEM MANUFACTURER. WHERE THE EXISTING ECC IS NOT REQUIRED FOR THE FINAL FIRE ALARM SYSTEM OPERATION OR IS NOT COMPATIBLE WITH THE EXISTING CAMPUS FIRE ALARM SYSTEM, THE ECC SHALL BE DISCONNECTED FROM ACTIVE SERVICE AND BYPASSED. NEW CLASSROOM FIRE ALARM DEVICES SHALL BE INTEGRATED INTO THE EXISTING CAMPUS FIRE ALARM SYSTEM THROUGH EXISTING COMPATIBLE SLC AND NAC CIRCUITS, INCLUDING ALL REQUIRED CONTROL MODULES, MONITOR MODULES, REMOTE POWER SUPPLIES, BATTERY BACKUP, AND SUPERVISION FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM.

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FLOOR PLAN - FIRE ALARM NEW CONSTRUCTION

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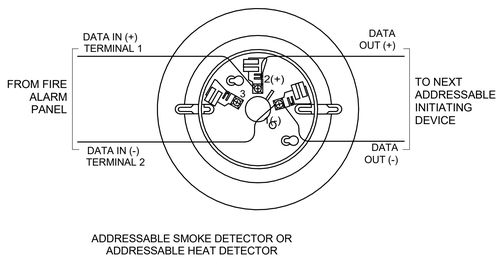
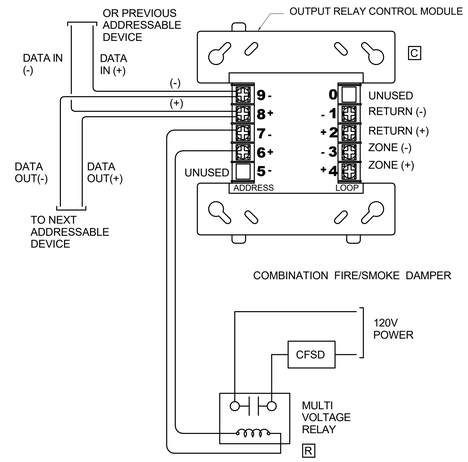
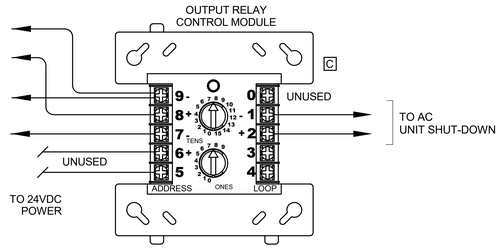


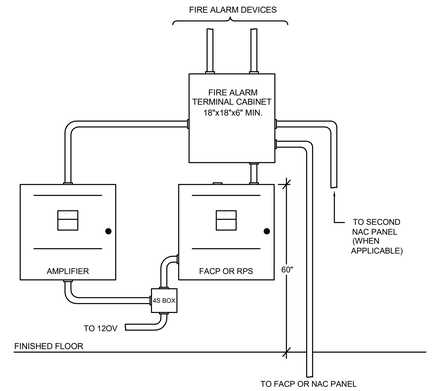
SMOKE / HEAT DETECTOR DETAIL | NTS | 1



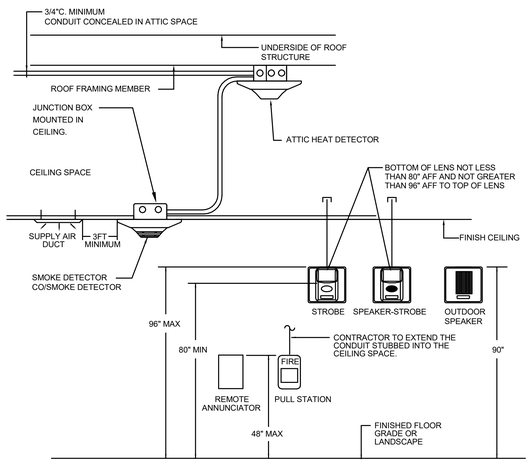
RELAY MODULE DETAIL | NTS | 2



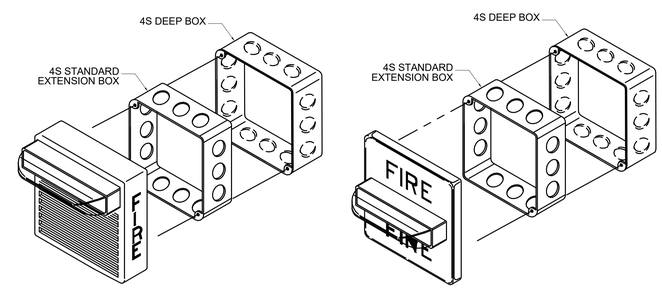
MONITOR MODULE DETAIL | NTS | 3



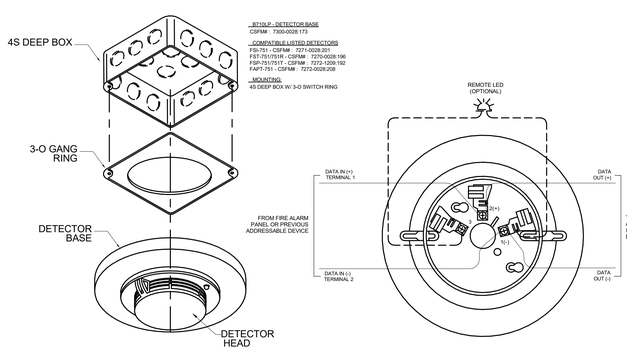
TYPICAL POWER SUPPLY LAYOUT | NTS | 4



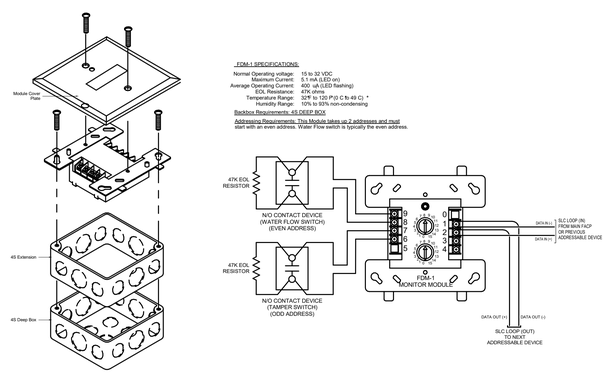
FIRE ALARM DEVICE ELEVATION DETAIL | NTS | 6



WALL MOUNT AUDIO/VISUAL DEVICE DETAIL | NTS | 8



SMOKE/HEAT DETECTOR BASE WIRING DETAIL | NTS | 9



MONITOR MODULE WIRING DETAIL | NTS | 11

NOT USED | NTS | 12

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SACRAMENTO, CA 95827

PROJECT:
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:
FIRE ALARM DETAILS

PROGRESS

DATE: **04/14/26**
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SHEET:

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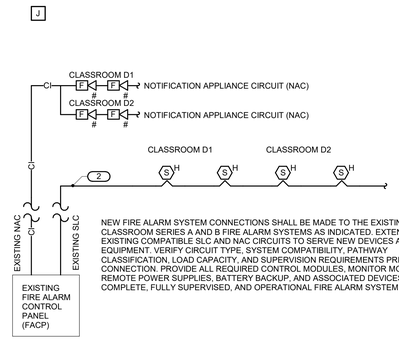

NEW FIRE ALARM SYSTEM CONNECTIONS SHALL BE MADE TO THE EXISTING CLASSROOM SERIES A AND B FIRE ALARM SYSTEMS AS INDICATED. EXTEND EXISTING COMPATIBLE SLC AND NAC CIRCUITS TO SERVE NEW DEVICES AND EQUIPMENT. VERIFY CIRCUIT TYPE, SYSTEM COMPATIBILITY, PATHWAY CLASSIFICATION, LOAD CAPACITY, AND SUPERVISION REQUIREMENTS PRIOR TO CONNECTION. PROVIDE ALL REQUIRED CONTROL MODULES, MONITOR MODULES, REMOTE POWER SUPPLIES, BATTERY BACKUP, AND ASSOCIATED DEVICES FOR A COMPLETE, FULLY SUPERVISED, AND OPERATIONAL FIRE ALARM SYSTEM.

1 FIRE ALARM RISER

NO SCALE

NOTES:

1. THE RISER DIAGRAM IS INTENDED TO CONVEY THE TYPES OF FIRE ALARM CONNECTIONS AND SPECIFICALLY DOES NOT INDICATE QUANTITIES, NUMBER OF CIRCUITS REQUIRED OR DISTANCES.
2. THE COMPLETE FIRE ALARM SYSTEM SHALL MEET ALL APPLICABLE CODES AND MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL COORDINATE ALL WIRE SIZES, TYPES AND REQUIREMENTS WITH THE VENDOR PRIOR TO BID. REFER TO SPECIFICATIONS TO DETERMINE CIRCUIT STYLES AND IF CONDUIT IS REQUIRED OR PLENUM RATED CABLE IS ACCEPTABLE.
4. ALL +120VAC WIRING REQUIRED FOR OPERATION OF THE SYSTEM AS DESCRIBED IN THE CONSTRUCTION DOCUMENTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
5. ALL NECESSARY RELAYS MAY NOT BE SHOWN ON THIS PLAN, BUT WHERE REQUIRED FOR PROPER OPERATION OF THE SYSTEM THEY SHALL BE PROVIDED BY THE CONTRACTOR.
6. PARTIAL EVACUATION OR RELOCATION OF OCCUPANTS IS THE STANDARD OPERATING PROCEDURE FOR THIS FACILITY IN THE EVENT OF AN ALARM. THEREFORE, ALL NOTIFICATION APPLIANCE CIRCUITS MUST BE INSTALLED AND PROTECTED IN ACCORDANCE WITH THE CIRCUIT SURVIVABILITY REQUIREMENTS DESCRIBED IN NFPA 72. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

KEYNOTES: #

1. REPRESENTATIVE OF PROGRAMMABLE I/O POINTS IN THE PANEL OR A GENERAL SYSTEM TROUBLE/ALARM CONTACT CONNECTED TO THE SYSTEM NOTED. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
2. REFER TO SPECIFICATION FOR REQUIREMENTS OF EACH INITIATION LOOP AND WIRING STYLE. REFER TO FLOOR PLANS FOR DEVICES AND THEIR LOCATIONS.
3. REFER TO SPECIFICATION FOR REQUIREMENTS OF EACH NOTIFICATION APPLIANCE CIRCUIT AND WIRING STYLE. REFER TO FLOOR PLANS FOR DEVICES AND THEIR LOCATIONS.
4. PROVIDE NOTIFICATION APPLIANCE EXTENDER PANELS AS REQUIRED. DETERMINATION OF NEED TO BE MADE BY FIRE ALARM VENDOR. REFER TO SPECIFICATIONS FOR REQUIREMENTS AND ACCEPTABLE MOUNTING LOCATIONS.
5. FIREMAN'S PHONE SYSTEM SHALL BE A SINGLE CHANNEL IN ACCORDANCE WITH NFPA CODE REQUIREMENTS. VENDOR TO DETERMINE NUMBER OF CIRCUITS REQUIRED.
6. REPRESENTS THE EXTENSION OF PROGRAMMABLE RELAYS TO THE ENGINEERED SMOKE CONTROL PANEL FOR SMOKE CONTROL AND BUILDING AUTOMATION SYSTEM CONTROL SEQUENCES. REFER TO SPECIFICATION SECTION 28 13 00 FOR ADDITIONAL REQUIREMENTS.
7. THE RELEASE PANEL WILL PROVIDE CONTACT CLOSURES TO BE MONITORED BY THE FIRE ALARM PANEL. THE ALARM AND AGENT RELEASE SIGNALS SHALL ACTIVATE A GENERAL ALARM. THE PRE-SIGNAL SHALL ACTIVATE A WARNING ON THE GUI ONLY.
8. REPRESENTS THE EXTENSION OF PROGRAMMABLE RELAYS TO THE ACCESS CONTROL SYSTEM. REFER TO SPECIFICATION SECTION 28 13 00 FOR QUANTITY OF POINTS REQUIRED.
9. THIS CONTRACTOR SHALL PROVIDE AN RS-232 CONNECTION FROM THE FIRE ALARM PANEL TO THE ALPHANUMERIC PAGING SYSTEM. THE FIRE ALARM VENDOR SHALL SUPPLY THE COMMUNICATION PROTOCOL TO THE OWNER. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
10. REPRESENTS THE EXTENSION OF PROGRAMMABLE RELAYS TO LIGHTING CONTROL PANEL FOR FIRE ALARM OVERRIDE OF LIGHTING CONTROL PANELS, AND BRANCH CIRCUIT CONTROL RELAYS, AND BRANCH CIRCUIT TRANSFER SWITCHES. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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PROJECT:

SCUSD ABRAHAM LINCOLN TK CLASSROOM ADD

SHEET NAME:

FIRE ALARM DIAGRAMS

PROGRESS

DATE: **04/14/26**

CLIENT PROJ NO:

SHEET:

FA5.00

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TESTING LABORATORY: _____ DATE: _____

NAME: _____

DISTRICT OWNER: _____

DIVISION – FILE NO. _____ APPLICATION NO. _____

ARCHITECT: _____

STRUCTURAL ENGINEER: _____

STATE OF CALIFORNIA
DEPT. OF GENERAL SERVICES
OFFICE OF THE
STATE ARCHITECT

STRUCTURAL TESTS AND INSPECTIONS

SSS 103-1 (R 11/85)

THE FOLLOWING TESTS AND INSPECTIONS, AS CHECKED, WILL BE REQUIRED AS DETAILED IN APPLICABLE SPECIFICATIONS.

COMPACTED FILL	Concrete	Gunite	Grout	Mortar	
Fill material, acceptance tests					Test of aggregate for mix design only
Compaction control, continuous					Suitability tests of aggregates as detailed below
Compaction tests only as directed					Mix designs (if method B or C used)
Bearing capacity of compact fill	X				Provide weighmaster's certificate
REINFORCING STEEL					Inspect placing
Sample and test bar steel					Sample
Sample and test mesh	X				Compression tests
Inspect placing at job					Pick samples at job
STRUCTURAL STEEL					Samples delivered to laboratory
Sample and tests as detailed below					Deliver sample forms to jobsite
Shop fabrication inspection					Sample and test cement
Field erection inspection					
Inspection of welds – Shop					
Inspection of welds – Field					
Inspection of riveting or bolting – Shop					
Inspection of riveting or bolting – Field					
Sample and test high strength bolts and washers					
BRICK AND BLOCK					
Sample and test					
Test only					
Inspection of placing					
Core drill samples					
GLUED LAMINATED STRUCTURAL LUMBER					
Fabrication Inspection					
Sample and test steel accessories					
Inspect fabrication of steel accessories					

SUITABILITY TESTS	Concrete Materials	Gunite	Mortar	Grout
Sodium sulphate				
Structural strength				
Los Angeles rattler				
Clay (hydrometer method)				
Reactivity tests				
Volume change				

MIX DESIGNS: CONCRETE, GROUT, MORTAR OR GUNITE

MATERIAL	MAXIMUM SIZE	Cap Dia	COMPRESSIVE STRENGTH, PSI, MINIMUM			
CONC	1"	28 DAY	3000			

List of structural steel members to be tested

(Is this list continued: Yes No X)

Other Tests and Inspections, together with special instructions:

(Are these instructions continued: Yes No X)

Copies of Reports to:

By: _____
AUTHORIZED REPRESENTATIVE

OMIT	PAGE	DESCRIPTION
	A	INDEX AND TEST & INSPECTION SHEET
	A1	GENERAL NOTES
/	A1.1	12'x40' EXTERIOR ELEVATIONS
	A1.2	24'x40' EXTERIOR ELEVATIONS
/	A1.3	36'x40' EXTERIOR ELEVATIONS
/	A1.4	48'x40 EXTERIOR ELEVATIONS
/	A1.5	60'x40' EXTERIOR ELEVATIONS
/	A1.6	72'x40' EXTERIOR ELEVATIONS
/	A2.1	12'x40' FLOOR AND REFLECTED CEILING PLANS
	A2.2	24'x40' FLOOR AND REFLECTED CEILING PLANS
/	A2.3	36'x40' FLOOR AND REFLECTED CEILING PLANS
/	A2.4	48'x40' FLOOR AND REFLECTED CEILING PLANS
/	A2.5	60'x40' FLOOR AND REFLECTED CEILING PLANS
/	A2.6	72'x40' FLOOR AND REFLECTED CEILING PLANS
	A3	STANDARD DETAILS
	A4	GENERAL SPECIFICATIONS
	P1	STANDARD PLUMBING SPECIFICATIONS AND DETAILS
	S0.1	GENERAL NOTES AND TYPICAL DETAILS
	S0.2	TYPICAL DETAILS
/	S2.1S	12'x40' WOOD PAD & CONCRETE FOUNDATION PLANS
	S2.1W	WOOD PAD FOUNDATION PLANS
/	S2.2S	12'x40' FLOOR AND ROOF FRAMING PLANS
	S2.2M	MULTI-WIDE FLOOR AND ROOF FRAMING PLANS
/	S3.1S	12'x40' SHEARWALL ELEVATIONS
	S3.1MA	MULTI-WIDE SHEARWALL ELEVATIONS (24', 36', & 48'x40')
/	S3.1MB	MULTI-WIDE SHEARWALL ELEVATIONS (60' & 72'x40')
	S5.1W	WOOD PAD FOUNDATION DETAILS
	S8.1	FRAMING DETAILS
	S8.2	FRAMING DETAILS
/	S9.1RA	RAMP AND LANDING PLANS AND DETAILS
/	S9.2R	STEEL STAIR DETAILS & ZERO CLEARANCE RAMP

SHEETS WHICH DO NOT APPLY TO THE APPLICATION ARE NOT INCLUDED. DETAILS WHICH ARE NOT APPLICABLE HAVE BEEN CROSSED OUT

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LICENSED ARCHITECT
MICHAEL A. McALLISTER
NO. C-17250
EXP. 2/28/17
STATE OF CALIFORNIA

34-53
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DIV. OF THE STATE ARCHITECT
02 115037
AC MT FLS MR SS
DATE 4-7-2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 105088
AC FLS SS
DATE

DESIGN
ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WIND = 80 MPH EXP C
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE ≥15KM

REVISIONS

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OFFICE OF REGULATION SERVICES
02 101487
AC FLS MR SS
DATE 11/10/99
CBC 1998

DIVISION OF STATE ARCHITECT

ENGINEER

ARCHITECT

LICENSED ARCHITECT
MICHAEL A. McALLISTER
C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

~~12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'~~
RELOCATABLE BUILDINGS
~~Department of City U.S.D.~~
~~Maywood Elementary~~

TITLE AND TEST & INSPECTION SHEET

DRAWN: TDL/CLP
CHECKED: TLV
DATE: 07/15/99
SCALE: N.T.S.
JOB NO.: 0313
FILE: P269A

A

GENERAL:

A. ALL WORK TO BE IN ACCORDANCE WITH REQUIREMENTS OF CALIFORNIA BUILDING CODE; TITLE 24, PART 2 AND TITLE 24, PART 1, GROUP 1. A COPY OF THESE REGULATIONS SHALL BE KEPT ON THE JOB SITE AT ALL TIMES.

B. PLANS AND SPECIFICATIONS: CHANGES IN PLANS AND SPECIFICATIONS SHALL BE MADE BY THE ADDENDUM OR CHANGE ORDER, SIGNED BY THE ARCHITECT AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT (DSA). CHANGE ORDERS SHALL ALSO BE SIGNED BY THE OWNER PRIOR TO APPROVAL BY DSA.

C. TESTING: TESTS OF MATERIALS SHALL BE BY A PERSON OR TESTING LABORATORY SELECTED BY THE OWNER WITH THE APPROVAL OF DSA AND THE ARCHITECT. THE OWNER SHALL BE RESPONSIBLE FOR THE COST OF TESTING, EXCEPT FOR THE RETESTING REQUIRED BY THE FAILURE OF ANY MATERIAL TO PASS.

D. ERECTION AT THE SITE: THE BUILDING SHALL BE TRANSPORTED, ERECTED AND SET ON FOUNDATION AS REQUIRED BY A LICENSED TRANSPORTER. ALL REQUIRED FINISH WORK SHALL BE COMPLETED BY SKILLED LABOR OF THE MANUFACTURER/CONTRACTOR, BUT WILL NOT INCLUDE UTILITIES SERVICE CONNECTION.

E. SITE WORK: THE OWNER, UNLESS OTHERWISE SHOWN ON THE APPROVED PLANS, WILL PROVIDE SITE(s) SATISFACTORY TO THE ARCHITECT OR ENGINEFR FOR THE INSTALLATION OF THE RELOCATABLE BUILDING(s) THAT ARE LEVEL AND HAVE STABLE SOIL CONDITIONS WITH ADEQUATE SITE DRAINAGE, EXCEPT IF DESIGNATED IN THE CONTRACT DOCUMENTS AS THE RESPONSIBILITY OF THE MANUFACTURER/CONTRACTOR. IF ADDITIONAL GRADING AND/OR LEVELING IS NECESSARY FOR PROPER INSTALLATION OF MODULAR UNITS, THE ADDITIONAL CHARGE WILL BE THE RESPONSIBILITY OF THE OWNER.

F. UTILITIES: THE OWNER WILL BE RESPONSIBLE FOR ANY AND ALL UTILITY, FIRE ALARM OR SPECIAL ELECTRICAL SIGNAL SYSTEM CONNECTIONS EXCEPT IF DESIGNATED IN THE CONTRACT DOCUMENTS AS THE RESPONSIBILITY OF THE MANUFACTURER/CONTRACTOR.

FIRE EXTINGUISHER: UL2A-10BC, PRESSURE TYPE, MAX. 48" TO EXTINGUISHER BRACKET - SEE SPECIFICATION SHEET A4.

INSULATION:
SHALL COMPLY WITH CALIFORNIA QUALITY STANDARDS FOR INSULATING MATERIAL. FLAME SPREAD -MAX. 25, SMOKE DEVELOP -MAX. 450 CBC SEC. 707. SEE SPECIFICATION SHEET A4.

T-GRID CEILING:
SUSPENDED T-BAR SYSTEM WITH LAY-IN PANELS
FLAME SPREAD - MAX. 0-25, SMOKE DEVELOP - MAX. 450
SEE SPECIFICATION SHEET A4.

FIRE ALARM SYSTEM: - SEE SPECIFICATION SHEET A4
THE OWNER, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS, SHALL BE RESPONSIBLE FOR PROVIDING THE FIRE ALARM SYSTEM CONFORMING TO CALIFORNIA BUILDING CODE SECTION 305.9, THE CALIFORNIA ELECTRICAL CODE AND THE CALIFORNIA FIRE CODE, ARTICLE 10.

INSTALLATION OF THE FIRE PROTECTIVE SIGNALING SYSTEM SHALL NOT BE STARTED UNTIL DETAILED PLANS AND SPECIFICATIONS, INCLUDING STATE FIRE MARSHAL LISTING NUMBER FOR EACH COMPONENT OF THE SYSTEM, HAVE BEEN APPROVED BY DSA.

INSTALLATION OF THE PROTECTIVE SIGNALING EQUIPMENT SHALL BE SUBJECT TO ACCEPTANCE TESTS AS REQUIRED BY THE ENFORCING FIRE AGENCY.

GROUNDING OF BUILDING COMPONENTS:

1. THE OWNER, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS, SHALL RESPONSIBLE FOR PROVIDING THE NECESSARY GROUNDING OF THE BUILDING ELECTRICAL SYSTEM PER CEC SECTIONS 250-81 AND 250-83.

2. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE NECESSARY GROUNDING OF THE METAL PORTION BUILDING COMPONENTS (METAL FRAMED STEEL RAMP, ETC.) TO MEET THE REQUIREMENTS OF IR 27-1 ISSUED BY DSA

3. THE PROJECT INSPECTOR SHALL WITNESS AND VERIFY THE GROUNDING TESTS.

FACTORY-MADE AIR DUCTS: FACTORY-MADE AIR DUCTS SHALL BE APPROVED FOR THE USE INTENDED OR SHALL CONFORM TO THE REQUIREMENTS OF CMC STANDARD NO. 6-3. EACH PORTION OF A FACTORY-MADE AIR DUCT SYSTEM SHALL BE IDENTIFIED BY THE MANUFACTURER WITH A LABEL OR OTHER SUITABLE IDENTIFICATION INDICATING COMPLIANCE WITH CMC STANDARD NO. 6-3 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE TERMS OF THEIR LISTING.

INSULATION APPLIED TO THE EXTERIOR SURFACE OF DUCTS LOCATED IN BUILDINGS SHALL HAVE A FLAME SPREAD OF NOT MORE THAN 25 AND A SMOKE DENSITY OF NOT MORE THAN 50 WHEN TESTED AS A COMPOSITE INSTALLATION INCLUDING INSULATION, FACING MATERIALS, TAPES AND ADHESIVES AS NORMALLY APPLIED.

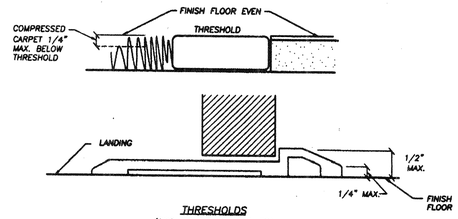
MATERIAL EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE-DEVELOPMENT RATING OF NOT MORE THAN 50.

AIR FILTERS: AIR FILTERS SHALL BE LISTED UNITS PER UFC STANDARD NO. 9-6. AIR FILTERS SHALL COMPLY WITH ALL REQUIREMENTS OF STATE STANDARD 12-71-1.

PIPE AND TUBING: INSULATION AND COVERING ON PIPE AND TUBING SHALL HAVE A FLAME SPREAD-RATING NOT TO EXCEED 25 AND A SMOKE DENSITY NOT TO EXCEED 450 PER CBC SECTION 707.2

MODULE IDENTIFICATION LABEL:
THE MANUFACTURER SHALL PLACE TWO PERMANENT METAL IDENTIFICATION LABELS ON EACH MODULE, ONE MECHANICALLY FASTENED AND VISIBLE FROM THE EXTERIOR AND THE OTHER MECHANICALLY FASTENED TO THE INTERIOR FRAME ABOVE THE CEILING, AT THE END OF THE MODULE.

THE LABELS SHALL SHOW DSA APPLICATION NUMBER, MANUFACTURER'S NAME, SERIAL NUMBER, DESIGN LIVE LOADS FOR ROOF AND FLOOR FRAMING, WIND SPEED AND EXPOSURE CATEGORY.



THRESHOLDS
(CBC FIGURE NO. 11B-32)

THESE DIAGRAMS ILLUSTRATE THE SPECIFIC REQUIREMENTS OF THE REGULATIONS AND ARE INTENDED ONLY AS AN AID FOR BUILDING DESIGN AND CONSTRUCTION, NOT AS AN ILLUSTRATION OF A SPECIFIC THRESHOLD MODEL OR TYPE.

THRESHOLD - TYPICAL:
ALL THRESHOLDS TO CONFORM TO DIMENSIONS IN CBC FIGURE 11B-32

DOOR HARDWARE: SEE SPECIFICATION SHEET A4.
EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY OTHER SPECIAL KNOWLEDGE OR EFFORT. LATCHING AND LOCKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN A PATH OF TRAVEL, SHALL BE OPERABLE WITH A SINGLE-EFFORT BY LEVER HARDWARE; PANIC BARS, PUSH-PULL ACTIVATING BARS, OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE. SEE CBC SECTIONS 1003.3.1.8 AND 1003.3.1.9.

APPLICABLE CODES:

1998 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.

1998 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.;
(1997 UNIFORM BUILDING CODE VOLUMES 1-3 AND CALIFORNIA AMENDMENTS)

1998 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.;
(1996 NATIONAL ELECTRICAL CODE AND CALIFORNIA AMENDMENTS)

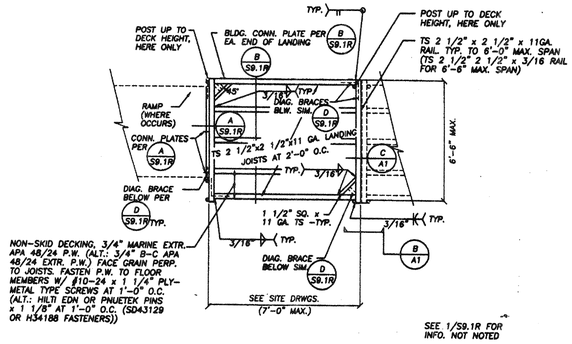
1998 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.;
(1997 UNIFORM MECHANICAL CODE AND CALIFORNIA AMENDMENTS)

1998 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.;
(1997 UNIFORM PLUMBING CODE AND CALIFORNIA AMENDMENTS)

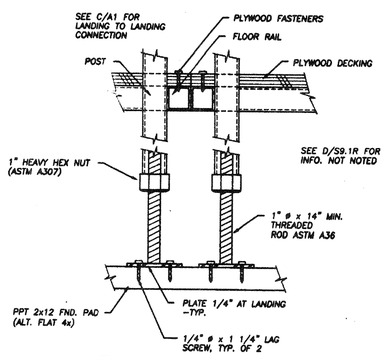
1998 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R.,
(1997 UNIFORM FIRE CODE AND CALIFORNIA AMENDMENTS)

1998 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 C.C.R.

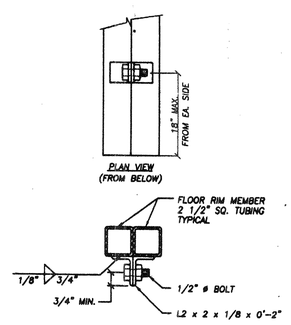
1990 TITLE 19, C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS



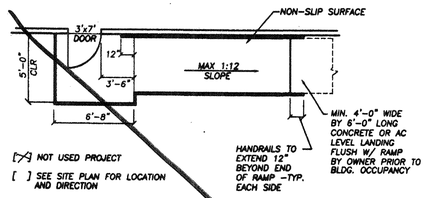
A/A1 LANDING FLOOR PLAN AT EXTENDED LANDING
NTS



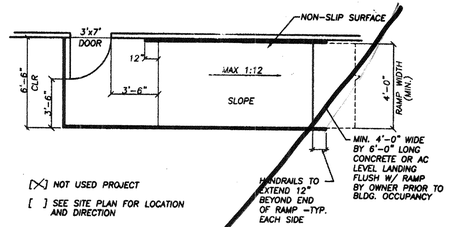
B/A1 LANDING TO LANDING CONNECTION AT BASE
NTS



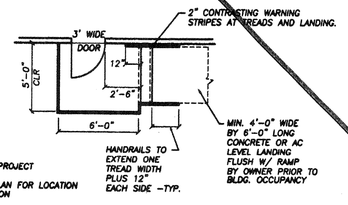
C/A1 LANDING TO LANDING CONNECTION
NTS



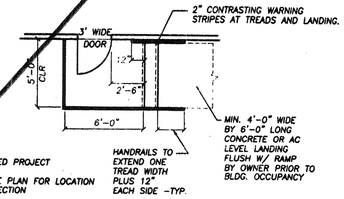
PORTABLE STEEL RAMP AND LANDING - TYPE "A"
(FOR DETAILS SEE SHEET S9.1R)



CONCRETE RAMP AND LANDING - TYPE "C"
(FOR DETAILS SEE SHEET S9.1R)



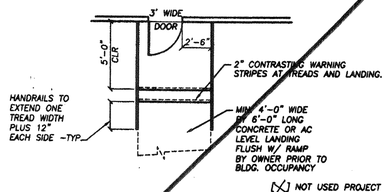
PORTABLE STEEL LANDING WITH STEPS - TYPE "A1"



CONCRETE LANDING WITH STEPS - TYPE "C1"

NOTE:
ALL RISERS MUST BE EQUAL HEIGHT PER CBC SEC 1003.3.3.3
THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT NOT TO EXCEED THE SMALLEST BY 3/8".
RISER: 4" TO 7" MAX TREAD WIDTH: 11"

(FOR DETAILS SEE SHEET S9.1R)

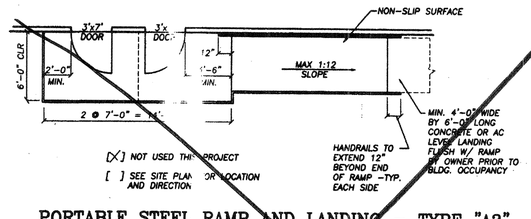


NOT USED

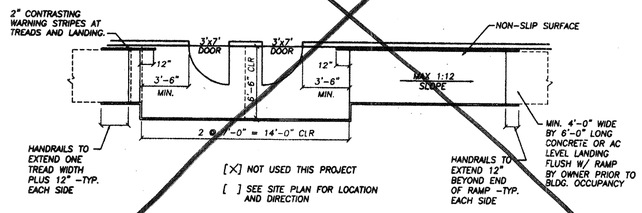
PORTABLE STEEL LANDING WITH STEPS - TYPE "A2"

NOTE:
ALL RISERS MUST BE EQUAL HEIGHT PER CBC SEC. 1003.3.3.3
THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT NOT TO EXCEED THE SMALLEST BY 3/8".
RISER: 4" TO 7" MAX TREAD WIDTH: 11"

(FOR DETAILS SEE SHEET S9.2R)



PORTABLE STEEL RAMP AND LANDING - TYPE "A3"
(AS SHOWN OR O.H.)



PORTABLE STEEL RAMP, STEPS AND LANDING - TYPE "A4"
(AS SHOWN OR O.H.)

NOT USED

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC MT FLS MS SS
DATE 4-1-2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 105083
AC FLS KB 03 KB
DATE 4-1-03

REVISIONS

PC

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
02 101487
AC FLS RAL SS
DATE 11/6/97

DIVISION OF STATE ARCHITECT

ENGINEER

ARCHITECT

LICENSED ARCHITECT
TIMOTHY L. VANDERHEYDEN
C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA 95650 (916) 652-9291

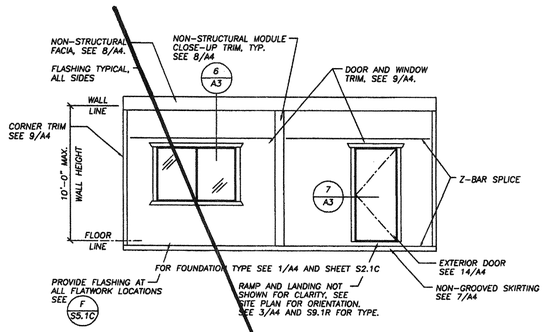
~~12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'~~
RELOCATABLE BUILDINGS
SACRAMENTO CITY U.S.D.
HARRISON ELEMENTARY

GENERAL NOTES AND RAMP & LANDING LAYOUTS

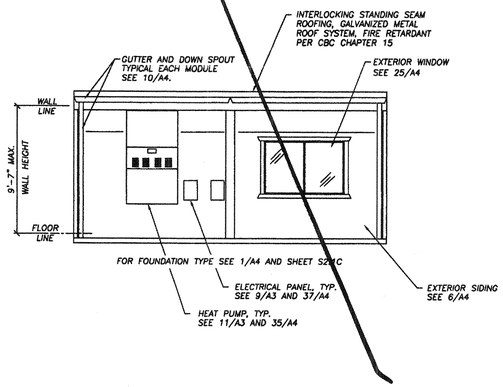
LICENSED ARCHITECT
MITCHELL A. McALLISTER
NO. C-17250
REN. 2/28/17
STATE OF CALIFORNIA

DRAWN	TDL/CLP
CHECKED	TLV
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	0313
FILE	P269A1

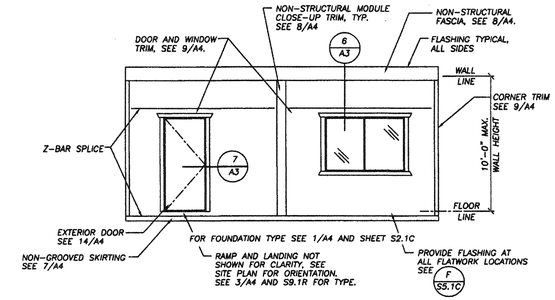
A1



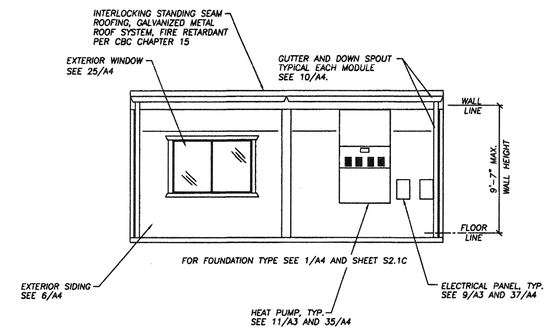
FRONT ELEVATION-A



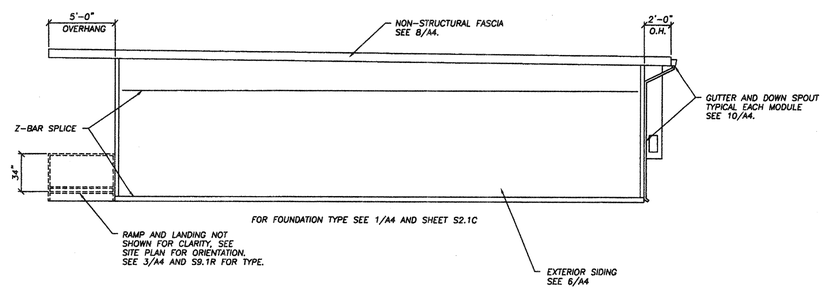
REAR ELEVATION-A



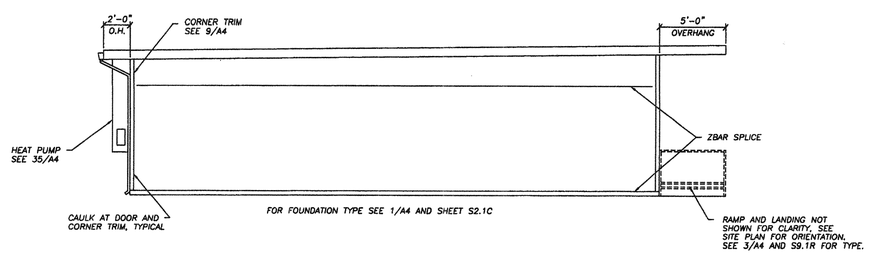
FRONT ELEVATION-B



REAR ELEVATION-B



SIDE ELEVATION



SIDE ELEVATION

IDENTIFICATION STAMP
DIV OF THE STATE ARCHITECT
02 115937
AC
DATE 4-7-2016

LICENSED ARCHITECT
MICHELLE A. McALLISTER
NO. C-17250
REN. 2/28/17
STATE OF CALIFORNIA

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 105031
AC
DATE 4-1-03

NOTE:

PROVIDE FOR UNDERFLOOR VENTILATION PER CBC 2317.7.

1 SQUARE FOOT OF VENTILATION IS REQUIRED FOR EACH 150 SQUARE FEET OF UNDERFLOOR AREA.

TOTAL VENTILATION REQUIRED:

23'-6" x 40'-0" = 940 SQ. FT. / 150 = 6.26 SQ. FT.

TOTAL VENTS REQUIRED:

CONCRETE FOUNDATION = 8-6"x24" VENTS

VENT LOCATION:

INSTALL VENTS AT LOCATIONS TO AVOID FOUNDATION PADS OR CONCRETE FLAT WORK, SEE SITE PLAN.

OPENINGS SHALL BE LOCATED CLOSE TO CORNERS. THE REQUIRED AREA SHALL BE EQUALLY DISTRIBUTED ALONG TWO OPPOSITE SIDES. PER TITLE 24 SECTION 2317A.7

REVISIONS

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER
TERRY L. FRAZIER
No. 4424
Exp. 03/31/06
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPLEY ROAD, P.O. BOX 527, LOOMIS, CA 95650 (916) 652-9291

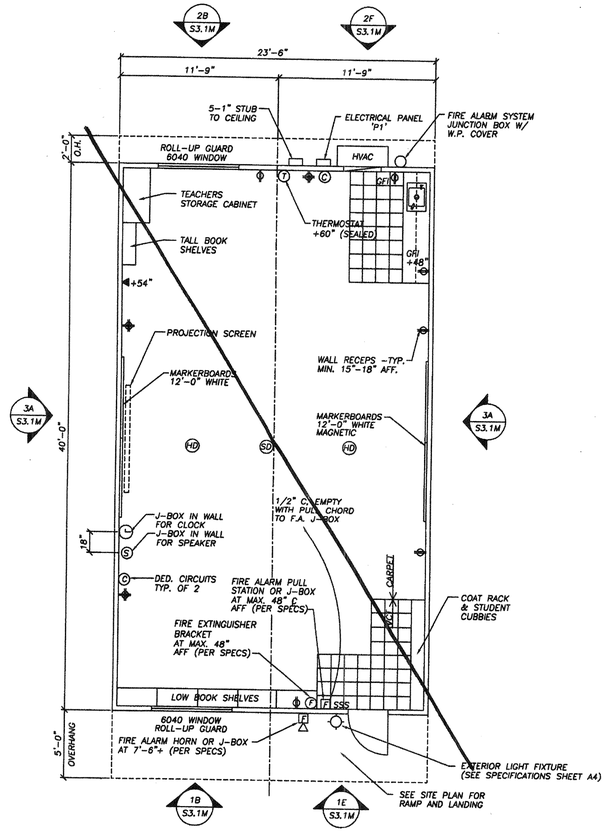
24'x40' RELOCATABLE BUILDINGS

SACRAMENTO CITY U.S.D.
~~Nicholas Elementary~~

24'x40' EXTERIOR ELEVATIONS

DRAWN	DPB
CHECKED	JTD
DATE	02/03/03
SCALE	3/16" = 1'-0"
JOB NO.	0313
FILE	0313A12

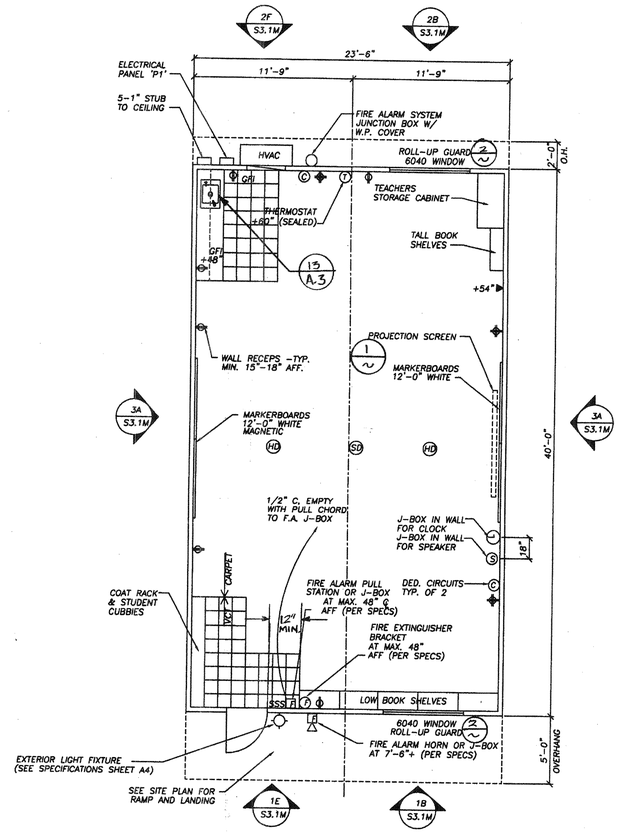
A1.2



FLOOR PLAN "A"

24'x40' CLASSROOM
E:\03 JOBS\0313\0313A22.dwg
02/03/03

SEE ELECTRICAL NOTES AND SPECS SHEET A4



FLOOR PLAN "B"

24'x40' CLASSROOM
E:\03 JOBS\0313\0313A22.dwg
02/03/03

SCHEDULE PANEL P1						MAIN BKR: 200A		
TYPE: SQD HOM NEMA- 3R (SEE SPEC SHEET)						VOLTS: 120/240		
MOUNTING: SURFACE						PHASE: 1 WIRE: 3		
POLE NO.	SERVING	KVA LOAD	CKT BKR	ϕ	ϕ	CKT BKR	KVA LOAD	SERVING	POLE NO.
1	HVAC	3.6	45			20	1.1	RECEPS	2
3	⊥	3.6	/			20	.36	GFI RECEPS	4
5	DED. CIRCUITS	.18	20						6
7	⊥	.18	20						8
9		.36	20						10
11	LIGHTS	1.1	20						12
13									14
15									16
17									18

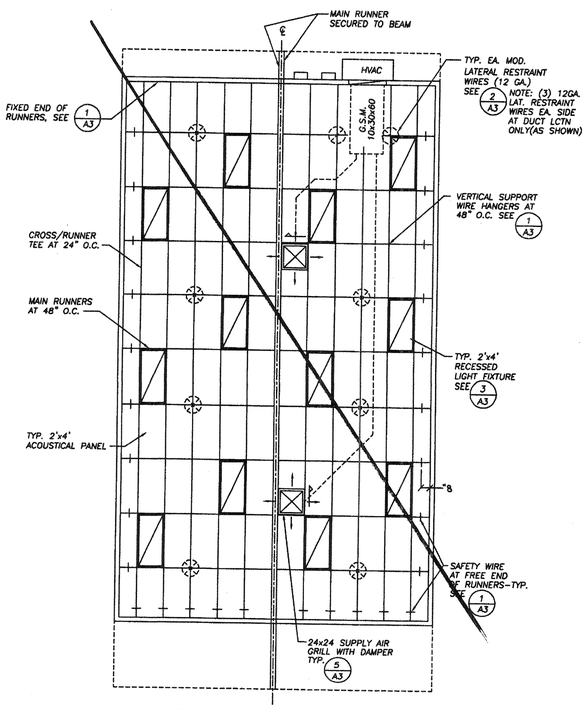
CONNECTED LOAD: KVA 10.28KVA 230V = 45 AMPS

** 12 SEER UNIT
* MAY BE HIGHER IF WATER HEATER IS USED.

PANEL LISTED FOR USE AS SERVICE EQUIPMENT
* HACR RATED C.B. WITH 'LOCK-OFF' CLIP

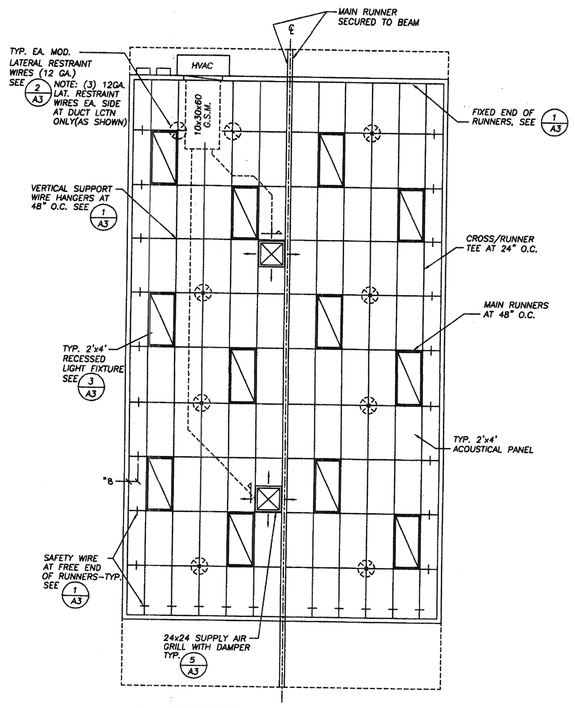
ELECTRICAL NOTES

1. GROUNDING OF ELECTRICAL SYSTEM PER DETAIL 8/A3. SEE GROUNDING OF BLDG COMPONENT NOTES, SHT. A1.
2. IF MAIN FUSES ARE NOT PROVIDED IN THE HEAT PUMP UNIT BY THE EQUIPMENT MANUFACTURER, THE HVAC UNIT CIRCUIT BREAKER(s) MUST BE HACR RATED.
3. A LOCK OFF CLIP IS TO BE PROVIDED FOR THE HEAT PUMP FEEDER CIRCUIT BREAKER.
4. ALL WIRING TO BE IN MINIMUM 1/2" CONDUIT.
5. ALL RACEWAYS SHALL CONTAIN EQUIPMENT GROUNDING CONDUCTOR PER CEC 250-95.
6. CONDUCTORS TO BE LISTED FOR USE AT 75° C MINIMUM. DERATING MAY BE REQUIRED OF 60° C RATED WIRE (TW).
7. MAIN CIRCUIT BREAKER PER CEC 230-70.

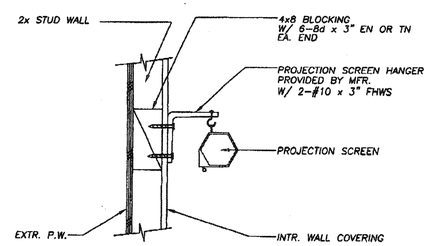


REFLECTED CEILING PLAN

CEILING HEIGHT AT 8'-6"

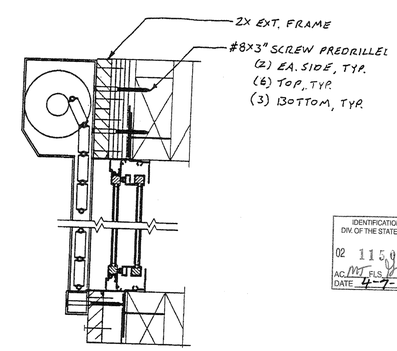


REFLECTED CEILING PLAN



1/~ PROJECTION SCREEN BRACKET CONN.

SCALE: 1 1/2" = 1'-0"



TYPICAL WINDOW SHUTTER 2/~

NO SCALE

ROOM SIGNAGE
PROVIDE ROOM SIGNAGE PER SECTION 1117B.5

STEEL EXPOSED CEILING GRID SYSTEM- SEE SPEC SHT A4 SHALL COMPLY WITH CBC CHAPTER 25A AND IR M-3. (HEAVY DUTY MAIN RUNNERS)
ACOUSTIC LAY-IN PANELS - SEE SPEC SHT A4
FLAME SPREAD: 0-25
SMOKE DEVELOPED: 450 MAX.

LICENSED ARCHITECT
RUSSELL A. MCALLISTER
NO. C-17250
REN. 2/28/17
STATE OF CALIFORNIA

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC DATE 4-7-2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
10 5033
AC DATE 4-1-03

REVISIONS

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER
LEE ALAN VANCE
No. 4424
Exp. 03/31/06
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

24'x40' RELOCATABLE BUILDINGS

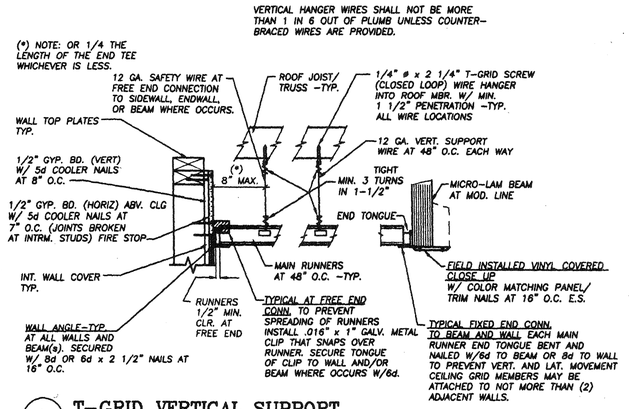
SACRAMENTO CITY U.S.D.
~~Hubert H. Humphrey~~ Sam Brannan Elementary

24'x40' FLOOR AND REFLECTED CEILING PLANS

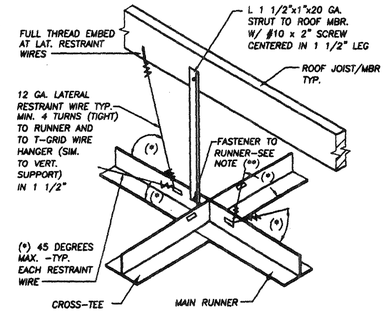
gdmfg

DRAWN	MLP/DPB
CHECKED	JTD
DATE	02/03/03
SCALE	3/16"=1'-0"
JOB NO.	0313
FILE	0313A22

A2.2

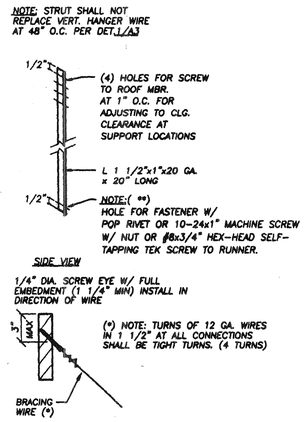


1 T-GRID VERTICAL SUPPORT

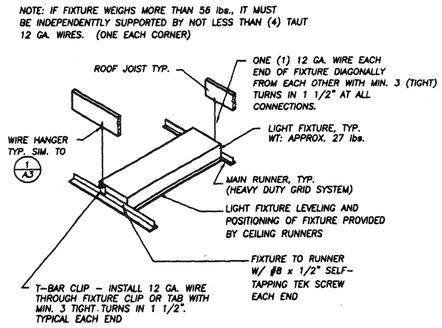


NOTE: LATERAL RESTRAINT WIRES (4 EACH) SECURED TO MAIN RUNNER WITHIN 2" OF CROSS-TEE INTERSECTION AND SPLAYED AT 90 DEGREES FROM EACH OTHER. RESTRAINT WIRES PLACED IN EACH MODULE NOT TO EXCEED 12 FEET O.C. IN EITHER DIRECTION FROM EACH OTHER. THE FIRST POINT OF WIRES WITHIN 6 FEET FROM SURROUNDING WALL. INSTALL T-GRID WIRE HANGERS PARALLEL TO DIRECTION OF LOAD.

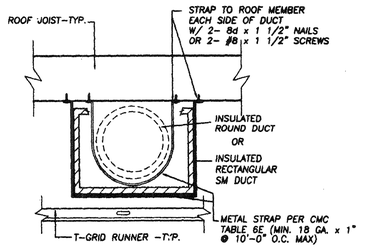
2 T-GRID LATERAL SUPPORT
SCALE: 1-1/2" = 1'-0"



BRACING WIRE DETAIL
SCALE: NTS

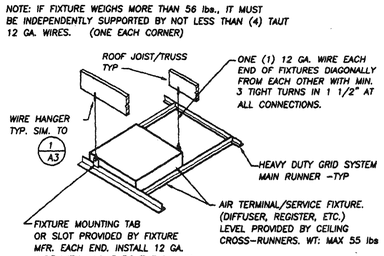


3 RECESSED LIGHT FIXTURE
SCALE: 3/8" = 1'-0"

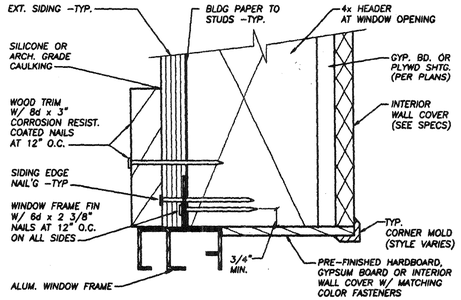


FACTORY-MADE AIR DUCTS: SEE GENERAL NOTES ON SHEET A1

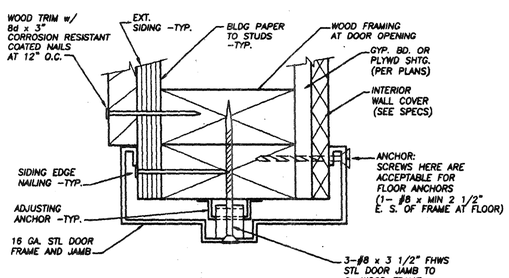
4 DUCT MOUNTING DETAIL
SCALE: 1" = 1'-0"



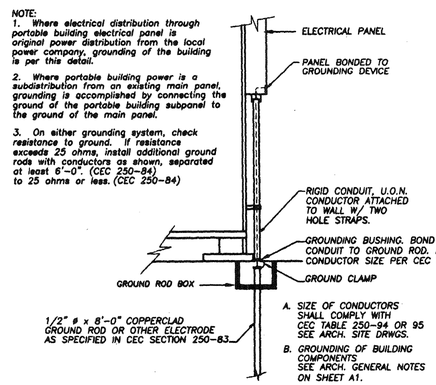
5 T-GRID AIR TERMINAL/ SERVICE FIXTURE
SCALE: 3/8" = 1'-0"



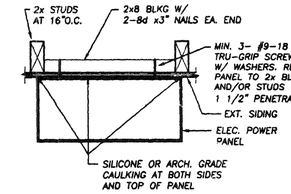
6 EXTERIOR WINDOW HEAD - TYP.
(SIM. AT SILL AND JAMB)
SCALE: 6"=1'-0"



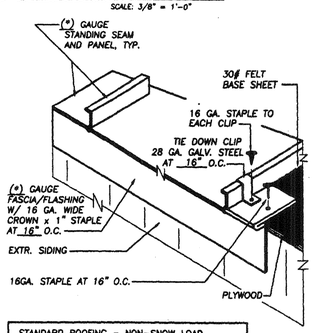
7 EXTERIOR DOOR JAMB METAL FRAME
SCALE: 8" = 1'-0"



8 GROUNDING DETAIL
Scale: 3/4"=1'-0"

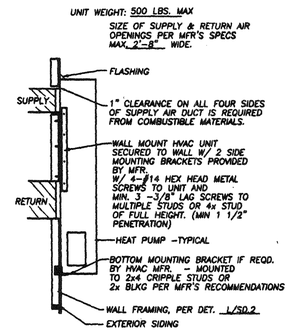


9 POWER PANEL SURFACE MOUNT
SCALE" 1 1/2" = 1'-0"



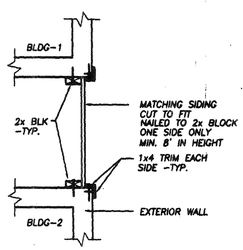
STANDARD ROOFING - NON-SNOW LOAD
(*) SEE SPECIFICATION SHEET A4
ROOFING: NON-STRUCTURAL (*) GAUGE GALV. SHEET METAL. INTERLOCKING STANDING SEAM. APPLIED OVER 30# FELT BASE SHEET AND MIN. 15/32" PLYWOOD DECKING. FIRE RETARDANT PER CBC SECTION 1504.1

10 METAL ROOF SYSTEM

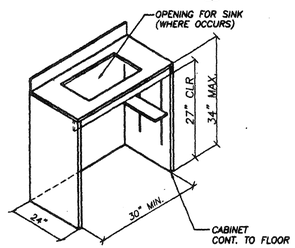


AIR FILTER: SEE GEN. NOTES ON SHEET A1

11 HVAC MOUNTING DETAIL
SCALE: 3/8" = 1'-0"
(FOR ROOF MOUNT UNIT SEE J/S8.2)

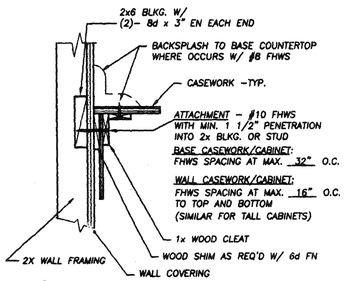


12 CLOSURE AT UNITS SET ADJACENT TO EACH OTHER
NTS

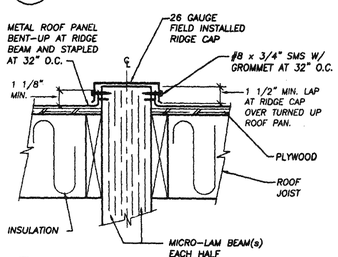


NOTES:
* DOORS NOT SHOWN FOR CLARITY DOORS ARE TO BE PROVIDED
* MODIFY BASE AS SHOWN FOR WHEELCHAIR ACCESS
* PROVIDE ADJUSTABLE METAL STANDARDS AND REMOVABLE SHELF (INTERMEDIATE AND BOTTOM)

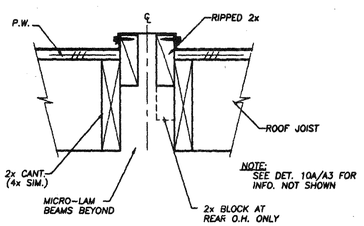
13 ACCESSIBLE CABINET
SCALE: 1/2"=1'-0"



14 CASEWORK TO WALL ATTACHMENT
(BASE CASEWORK SHOWN, WALL AND TALL CASEWORK SIMILAR)

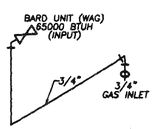


15 RIDGE CAP AT ROOF MOD. LINE
SCALE: 2" = 1'-0"



NOTE: SEE DET. 10A/A3 FOR INFO. NOT SHOWN

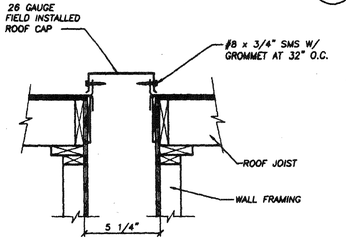
16 RIDGE CAP AT ALT. O.H. AT ROOF MOD. LINE
SCALE: 2" = 1'-0"



GAS SIZE PER CPC TABLE 12-3, TOTAL 6500 / 1100 = 59 CFH MAX. DISTANCE OF TRAVEL = 24 FT.

NOTES:
1. GAS LINE SHALL BE GALV. STEEL (BLACK PIPE) SUPPORTED AT 4'-0" O.C. AND AT ALL TURNS WITH EMT BRACKET AND 2-ø8 SCREWS WITH MIN. 1 1/2" PENETRATION TO BLKG. OR STUD
2. GAS SHUT-OFF SHALL BE WITHIN 3 FT. OF BARD UNITS PER CPC SECTION 1211.15.

17 GAS HEATING SYSTEM
N.T.S.



18 ROOF CLOSURE @ BUILDING SEPARATION
N.T.S.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC. FLS
DATE 4-7-2006

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 105033
AC. FLS
DATE 4-12-2004

PC
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
02 101487
AC. FLS
DATE 11/18/04

DIVISION OF STATE ARCHITECT

ENGINEER

ARCHITECT

LICENSED ARCHITECT MICHAEL A. MEALIFFE C-19,752 EXP. 07/31/01 STATE OF CALIFORNIA

LICENSED ARCHITECT MICHAEL A. MEALIFFE NO. C-17250 EXP. 2/28/17 STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA 95650 (916) 652-9291

~~12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'~~
RELOCATABLE BUILDINGS
~~Sacramento~~ CITY U.S.D.
HAZELWOOD ELEMENTARY
STANDARD DETAILS

DRAWN	TDL/CLP
CHECKED	TVL
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	03-13
FILE	P269A3

A3

GENERAL SPECIFICATIONS

A. MATERIALS AND WORKMANSHIP:

ALL WORKMEN SHALL BE SKILLED AND QUALIFIED FOR THE WORK WHICH THEY PERFORM. ALL MATERIALS USED, UNLESS OTHERWISE SPECIFIED, SHALL BE NEW AND OF THE TYPES AND GRADES SPECIFIED.

WORKMANSHIP SHALL BE EQUAL OR BETTER IN QUALITY TO THAT REQUIRED BY THE CONSTRUCTION TRADES FOR A FINISHED PRODUCT.

THE CONTRACTOR SHALL CERTIFY THAT NO ASBESTOS-CONTAINING BUILDING MATERIALS WHICH EXCEED STATE AND FEDERAL MANDATED SAFE ASBESTOS LEVELS HAVE BEEN USED IN THE CONSTRUCTION OF RELOCATABLE FACILITIES.

B. GENERAL DESIGN REQUIREMENTS:

EACH MODULE SHALL BE PERMANENTLY IDENTIFIED WITH TWO METAL IDENTIFICATION LABELS ON EACH MODULE WITH THE FOLLOWING INFORMATION:

a. DSA APPLICATION NUMBER
b. DESIGN WIND SPEED AND EXPOSURE
c. DESIGN ROOF LIVE LOAD
d. DESIGN FLOOR LIVE LOAD
e. MANUFACTURER'S NAME
f. SERIAL NUMBER

EACH MODULE SHALL BE CAPABLE OF RESISTING ALL VERTICAL AND LATERAL LOADS DURING TRANSPORTATION AND RELOCATION. (NORMAL INDUSTRY PRACTICE FOR BRACING MODULES DURING TRANSPORTATION IS ACCEPTABLE). WHEN MODULES ARE ASSEMBLED, JOINTS SHALL BE SEALED WITH REMOVABLE CLOSING STRIPS OR OTHER METHOD TO PRESENT A FINISHED APPEARANCE AND BE PERMANENTLY WATERPROOF.

EACH MODULE SHALL BE SUFFICIENTLY RIGID TO BEJACKED UP AT THE FRONT AND BACK CORNERS FOR RELOCATION WITHOUT DAMAGE IN ONE PIECE WITHOUT ADDITIONAL SUPPORTS OF ANY TYPE. EVIDENCE OF EXCESSIVE BOWING DURING THE INSTALLATION OF THE MODULES WHICH, IN THE OPINION OF THE AGENCY ARCHITECT OR STRUCTURAL ENGINEER, CAUSES EXCESSIVE WORKING AT ANY JOINT OR COMPROMISES THE STRUCTURAL INTEGRITY OF THE MODULE, SHALL BE SUFFICIENT REASON FOR REJECTION OF THE MODULE.

C. FRAMING: ROOF, WALLS AND FLOOR:

FRAMING MEMBERS SHALL BE OF THE GRADE AND SIZE CALLED FOR ON THE STRUCTURAL PLANS.

D. MOISTURE BARRIER:

ALL WEATHER-EXPOSED SURFACES SHALL HAVE A WEATHER-RESISTIVE BARRIER TO PROTECT THE INTERIOR WALL COVERING. SUCH BARRIER SHALL BE EQUAL TO THAT PROVIDED FOR IN BBC STANDARD 14-1 FOR KRAFT WATERPROOF BUILDING PAPER. BARRIER SHALL BE FREE FROM HOLES AND BREAKS OTHER THAN THOSE CREATED BY FASTENERS AND CONSTRUCTION SYSTEM DUE TO ATTACHING OF THE BUILDING PAPER.

E. ZBAR:

ALL HORIZONTAL JOINTS IN SIDING SHALL BE PROTECTED BY GALVANIZED Z BAR FLASHING, INCLUDING:

a. JUNCTION OF SIDING AND SKIRTING ON WOOD FLOOR FRAME UNITS.

FLASHING NEED NOT BE USED WHERE SKIRTING MEETS THE UNDERSIDE OF AN EXPOSED METAL FIBER FRAME AND THE SKIRTING IS RECESSED SUFFICIENTLY TO PROTECT THE TOP EDGE OF PLYWOOD.

F. ROOF OVERHANG:

ALL OVERHANGS SHALL PRESENT A PLEASING AND FINISHED APPEARANCE. SOFFITS SHALL BE ENCLOSED WITH NO VISIBLE FRAMING MEMBERS. SOFFIT MATERIAL SHALL BE 3/8" MIN. EXTERIOR SIDING. PLYWOOD SOFFIT MATERIAL SHALL BE APPLIED WITH EXPOSED GRAIN RUNNING PARALLEL TO THE LENGTH OF THE BUILDING. SOFFIT SHALL BE NEATLY AND CLOSELY FITTED AND TRIMMED TO COVER GAPS. ALL ENCLOSED SOFFIT AREAS SHALL BE VENTILATED PER CBC SECTION 1505.3.

G. ENTRY LANDING AND RAMP:

EACH MODULE SHALL HAVE A LANDING(s) AND RAMP(s) TO CONFORM TO CBC SECTION 1003.3.4. THE LANDING(s) AND RAMP(s) STRUCTURE, INCLUDING HANDRAIL AND WHEEL GUIDES, ARE TO BE PREFABRICATED METAL IN SECTIONS THAT ARE DEMOUNTABLE FOR MOVING AND REINSTALLATION AT A NEW SITE. THERE SHALL BE SUFFICIENT CROSS BRACING UNDER THE RAMP SURFACE TO PREVENT BOUNCE OR OIL CANNING OF THE RAMP SURFACE. DESIGN SHALL BE SUCH THAT HEIGHT ADJUSTMENT CAN BE MADE AT THE INSTALLATION SITE.

RAMP SHALL HAVE SKID RESISTANT SURFACE.

H. ELECTRICAL MATERIALS:

ALL ELECTRICAL WIRING 110V AND GREATER SHALL BE IN CONDUIT SYSTEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF CEC. MINIMUM SIZE CONDUIT IS 1/2"

ACCEPTABLE CONDUIT:
RIGID ELECTRICAL METALLIC TUBING (EMT); GALVANIZED THIN WALL
FLEXIBLE (INTERIOR); GALVANIZED STEEL
FLEXIBLE (EXTERIOR); GALVANIZED STEEL WITH FACTORY APPLIED PVC

ALL CONDUIT SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND SHALL BE SECURED IN CONFORMANCE WITH THE CEC. FIELD BENDS SHALL BE AVOIDED WHEREVER POSSIBLE. WHERE BENDS MUST BE MADE, USE AN APPROPRIATE "HICKEY" OR BENDING MACHINE. REAM AND DEBUR ALL CONDUIT PRIOR TO INSTALLATION AND TERMINATE IN APPROPRIATE BUSHINGS OR CONNECTORS, JACKET. WIRING SHALL BE #14 MIN. COPPER TYPE TW, THW, THWN AS APPLICABLE. CONDUIT FILL SHALL NOT EXCEED REQUIREMENTS OF THE CEC. A SEPARATE GROUNDING CONDUCTOR SHALL BE PULLED THROUGHOUT THE ENTIRE SYSTEM. CARE SHALL BE TAKEN TO AVOID DAMAGE TO WIRE OR INSULATION DURING PULLING. POWDERED SOAPSTONE OR A PULLING COMPOUND SUCH AS "YELLOW 77" LUBRICANT MAY BE USED IF NECESSARY.

VARIABLE SPECIFICATIONS

1. FOUNDATION
   - [ ] 50 PSF PT WOOD PADS
   - [ ] 125 PSF PT WOOD PADS
   - [x] CONCRETE 50 PSF
   - [x] FLASHING REQUIRED
2. FOUNDATION VENTS
   PROVIDE ONE SQUARE FOOT OF NET FREE FLOW AREA PER 150 SQUARE FEET OF FOUNDATION PERIMETER.
   - [ ] SCREEN VENTS
   - [x] EXPANDED METAL
   - [ ] OTHER
3. RAMP, LANDING AND STAIRS
   - [ ] PORTABLE STEEL MODULES
   - [ ] CONCRETE, PROVIDE STEEL HANDRAILS
   - [x] OTHER FLASHING ALL SIDES
4. ROOF OVERHANGS
   - [x] 5'-0" AT FRONT, 2'-0" AT REAR
   - [ ] 5'-0" AT BOTH FRONT AND REAR
   - [ ] OTHER
5. DROP SOFFIT
   - [x] MATCH RAFTER SIZE
   - [ ] 2'-0" DEEP AT 5'-0" OVERHANGS
   - [ ] OTHER
6. EXTERIOR PLYWOOD SIDING (STRUCTURAL)
   EXTERIOR SIDING MUST MEET MINIMUM STRUCTURAL REQUIREMENTS SPECIFIED IN GENERAL SPECIFICATIONS PARAGRAPH 2.
   - [x] 5/8" 4x8 DURATEMP APA RATED SIDING GROOVED AT 8" O.C.
   - [ ] 5/8" 4x8 MDO APA 303-OL GROOVED AT 8" O.C.
   - [ ] 5/8" 4x8 T1-11 APA 303 GROOVED AT 8" O.C.
   - [ ] OTHER
7. PLYWOOD SKIRTING (NON-STRUCTURAL)
   - [x] 5/8" NON-GROOVED DURATEMP APA RATED SIDING
   - [ ] 5/8" MDO APA 303-OL GROOVED AT 8" O.C.
   - [ ] OTHER
8. FASCIA AND CLOSE-UP TRIM (NON-STRUCTURAL)
   - [x] 1/2" THICK TEXTURED HARDBOARD
   - [ ] OTHER
9. DOOR, WINDOW AND CORNER TRIM (NON-STRUCTURAL)
   - [x] 1x4 RESAWN DRY SPRUCE, D.F. OR HEM FIR
   - [ ] OTHER
10. GUTTERS AND DOWN SPOUTS
    PROVIDE ONE SET PER BUILDING MODULE, PREFINISHED DARK DROWN
    - [ ] 30GA GALVANIZED STEEL
    - [x] HEAVY DUTY DOWN-SPOUTS: ____GA.
    - [ ] OTHER
11. PAINT
    EXPOSED STEEL PAINTED WITH HIGH GLOSS DTM INDUSTRIAL ENAMEL 100% ACRYLIC. EXPOSED WOOD PAINTED WITH LATEX ACRYLIC SELF PRIMING PAINT
12. ROOFING
    - [x] 26GA GALVANIZED STEEL STANDING SEAM, FIRE RATED PER UBC STANDARD 15-2, CLASS B.
    - [ ] CAULKING REQUIRED (SNOW)
    - [ ] OTHER
13. INSULATION
    SEE GENERAL NOTES ON SHEET A1 FOR STANDARDS AND FIRE RATING.
    - [x] R11 AT FLOOR AND WALLS; R19 AT ROOF
    - [ ] OTHER
    - [ ] SOUND INSULATION (SEE FLOOR PLAN FOR LOCATION)
14. EXTERIOR DOORS
    - [x] STEEL 3070 1 3/4" THK, 18GA FACE SHEETS,PREFINISHED DARK BRONZE
    - [ ] STEEL 3070 1 3/4" THK, 18GA FACE SHEETS,PAINTED SELECTED COLOR
    - [ ] OTHER
15. INTERIOR DOORS
    - [x] SC WOOD 3070 1-3/4" THK, EMBOSSED HARDBOARD FACE SHEETS, PREFINISHED DARK WALNUT
    - [ ] OTHER
16. FRAMES
    STEEL KNOCKDOWN 3070, 16GA, SOUND DEADENED GALVANIZED AND PRIMED.
    - [x] PREFINISHED DARK BRONZE
    - [ ] PAINTED SELECTED COLOR
    - [ ] OTHER
17. LOCKSETS AND LATCHSETS
    FINISH 626D BRUSHED CHROME
    - [x] D70PD CLASSROOM SCHLAGE RHODES (LEVER HANDLE)
    - [ ] D40S PRIVACY SCHLAGE RHODES (LEVER HANDLE)
    - [ ] D10S PASSAGE SCHLAGE RHODES (LEVER HANDLE)
    - [ ] SEIRES 4000, GRADE 1 PDQ (LEVER HANDLE)
    - [ ] PANIC HARDWARE, VON DUPRIN 99L WITH RIM CYLINDER
    - [ ] OTHER

17.A LOCKSETS AND LATCHSETS
- [x] C KEY
- [ ] E KEY
- [ ] F KEY
- [ ] EF KEY
- [ ] OTHER
- [x] 5 PIN
- [ ] 6 PIN

18. BUTTS
    3 PER DOOR, FINISH 26D BRUSHED CHROME
    - [x] HAGAR BB1279 NRP 4 1/2"x4 1/2"
    - [ ] HAGAR BB1191 NRP 4 1/2"x4 1/2"
    - [ ] OTHER
19. CLOSERS
    ADJUST TO 5# OPERATING PRESSURE FOR EXERIOR, OR 5.0# FOR INTERIOR, FINISH BRUSHED ALUMINUM.
    - [x] DORMA P7601 PA/SWB
    - [ ] OTHER
20. THRESHOLDS
    MAXIMUM 1/2" HEIGHT
    - [x] HAGAR 417SA - 36" (1/4"X6"), FINISH 628 (BRUSHED ALUMINUM)
    - [ ] OTHER
21. BOTTOM SWEEPS
    - [x] HAGAR 778 SAV - 36" (BRUSHED ALUMINUM WITH VINYL SEAL)
    - [ ] OTHER
22. WEATHER-STRIPPING
    - [x] FOAM FILLED VINYL, FRICTION FIT INTO PREPARED FRAME
    - [ ] HAGAR 891SV (BRUSHED ALUMINUM WITH VINYL SEAL)
    - [ ] OTHER
23. STOPS (26D FINISH)
    - [ ] FLOOR MOUNTED HAGAR 268F OR EQUAL 4 1/8" HEIGHT (EXTERIOR)
    - [ ] WALL MOUNTED HAGAR 236W OR EQUAL, BUMPER (INTERIOR)
    - [ ] FLOOR MOUNTED QUALITY 241F OR EQUAL, DOME (INTERIOR)
    - [x] OTHER
24. OPTIONAL EXTRA ITEMS AND HARDWARE
    - [ ] VISION LIGHTS SIZE: ____ GLASS: ____
    - [ ] LOUVERS SIZE: ____
    - [ ] OTHER
25. WINDOWS
    HORIZONTAL SLIDING , 50% VENTING, ANODIZED ALUMINUM FRAME. PERFORMANCE RATED PER AAMA GS101-88 FOR COMMERCIAL USE AND MEDIUM EXPOSURE, NAIL-ON FIN FASTED DIRECTLY TO FRAMING AND BEHIND SIDING MATERIAL, REMOVABLE SCREEN AT VENT SASHES. TEMPERED GLAZING TO BE NOTED ON FLOOR PLAN, DUAL PANE UNITS TO HAVE MINIMUM 1/4" AIR SPACE AND 1/8" GLASS (SEE FLOOR PLAN FOR SIZES)

    FRAMES:
    - [ ] CLEAR ANODIZED
    - [x] OTHER LEMI.

    GLAZING:
    - [ ] DUAL, 3/16" GRAY TINT
    - [ ] DUAL, 1/4" GRAYLITE 14
    - [ ] DUAL, OBSCURED
    - [ ] LAMINATED GLASS, WHERE NOTED ON PLAN
    - [ ] TEMPERED, WHERE NOTED ON PLAN
    - [x] OTHER SINGLE GRADE FLOAT, SAFETY GLASS W/ MINI BLINDS
26. INTERIOR WALL COVERINGS
    APPLIED OVER MINIMUM 1/2" GYPSUM BOARD, OR MINIMUM 3/8" (*)ORIENTED STRAND BOARD. EXPOSED SURFACES FIRE RATED PER ASTM E-84, FLAME SPREAD MAXIMUM 200, SMOKE DEVELOPED MAXIMUM 450. (*PROVIDE FIRE BLOCKING WHEN 3/8" OSB IS USED AS BACKING MATERIAL)
    - [x] TACKBOARD: VINYL WALL COVERING BY GENON CORP. SACKCLOTH SERIES, 8.8oz/SY, LAMINATED ONTO 1/2" INDUSTRIAL INSULATION BOARD, 4'-0"x9'-0", LONG EDGES BEVELED.
    - [ ] FRP: FIBERGLASS REINFORCED PLASTIC PANELS, 4'-0"x8'-0", WITH COLOR MATCHED PVC MOULDINGS
    - [ ] OTHER
27. CEILING GRID
    SUSPENDED SYSTEM, PERFORMANCE RATED ASTM C635 HEAVY DUTY
    - [x] DONN DX EXPOSED SYSTEM, STEEL, PREFINISHED WHITE
    - [ ] OTHER
28. ACOUSTIC LAY-IN CEILING PANELS
    LIGHT REFLECTIVE LR-1, FIRE RATED CLASS- I PER ASTM E84.
    - [x] VINYL FACED FIBERGLASS, 5/8" THICK, USG PREMIER KAPOK
    - [ ] VINYL FACED GYPSUM BOARD, 1/2" THICK USG STIPPLE PATTERN
    - [ ] OTHER
29. CARPET
    DIRECT GLUE-DOWN, PERFORMANCE RATED PER STATE OF CALIFORNIA SPECIFICATION 7220-21L-01.
    - [x] 26oz.
    - [ ] 28oz.
    - [ ] OTHER
    - [ ] FACTORY INSTALLATION: 2 1/2"W ALUMINUM THRESHOLD AT MODULE JOINTS, AS REQUIRED
    - [ ] ON SITE INSTALLATION: BUTT SEAMS
30. VINYL SHEET FLOORING
    MINIMUM WEAR LAYER .050" THICK, PERFORMANCE RATED PER ASTM F1303-90 TYPE-II, GRADE-1, CLASS-A, AND ASTM F970 125PSI, FIRE RATED PER ASTM E648 FLAMMABILITY CLASS-I, AND ASTM E662 SMOKE DENSITY MAXIMUM 450.
    - [ ] ARMSTRONG CLASSIC CORLON, SANDOVAL PATTERN, 6'-0" WIDE
    - [ ] ARMSTRONG "RHINO 90402" (OR EQUAL) CONTINUOUS FLOORING
    - [ ] OTHER
    - [ ] FACTORY INSTALLATION: 2 1/2"W ALUMINUM THRESHOLD AT MODULE JOINTS, AS REQUIRED
    - [ ] ON SITE INSTALLATION: BUTT SEAMS
31. VINYL COMPOSITION TILE
    12" SQUARE, MINIMUM 1/8" THICK, PERFORMANCE RATED PER ASTM F1066, COMP-1, CLASS-2, AND ASTM F970 75PSI, FIRE RATED PER ASTM E648 FLAMMABILITY CLASS-1, AND ASTM E662 SMOKE DENSITY MAXIMUM 450.
    - [x] ARMSTRONG STANDARD EXCELON
    - [ ] OTHER
    - [ ] FACTORY INSTALLATION: 2 1/2"W ALUMINUM THRESHOLD AT MODULE JOINTS, AS REQUIRED
    - [ ] ON SITE INSTALLATION: BUTT SEAMS
32. TOP SET BASE
    - [x] BURKE MOLDED RUBBER 1/8" THICK, 4" HEIGHT, COVE STYLE
    - [ ] 6" HEIGHT, MOLDED COVE STYLE BASE
    - [ ] OTHER
33. CHALKBOARDS / MARKERBOARDS
    TWO 4'-0"x8'-0" BOARDS MOUNTED SIDE BY SIDE, U.O.N.
    - [x] MARKERBOARD, SMOOTH PORCELAIN WRITING SURFACE
    - [x] OTHER 2-12 FT, MAGNETIC, ALUM FRAME
34. FIRE EXTINGUISHER
    PRESSURIZED, WITH CHARGE INDICATOR DIAL, MOUNTING BRACKET AT +48" MAX. A.F.F., NEAR EXTERIOR DOOR
    - [x] UL RATED 2A10BC
    - [ ] OTHER
35. HEAT PUMPS AND THERMOSTATS
    THERMOSTAT MOUNTED AT +60" (SEALED) A.F.F. NEAR RETURN AIR GRILL, WHITE ROGERS 1F82 WITH WH UNITS AND 1F90 WITH WAG UNITS
    - [x] BARD WH42-A10V
    - [ ] BARD WH48-A10V
    - [ ] BARD WH48-LA10V (LOCKOUT)
    - [ ] BARD WAG40A-A54C (NG / ELECTRIC)
    - [ ] BARD WAG40A-A54C (LPG / ELECTRIC)
    - [ ] ROOF MOUNTED ____ (OPERATING WT. = 500# MAX.)
    - [x] OTHER 12 SEER UNIT

    HVAC UNIT TO CONFORM TO CURRENT SMACNA STANDARDS, ARI 240-77 AND HVAC UL LISTING. PROVIDE POSTIVE MEANS OF DISCONNECT PER CMC SEC. 308.
36. DUCTWORK
    WITHIN 3'-0" OF THE HVAC UNIT, PROVIDE SHEET METAL DUCTING
    - [x] NON-METALLIC OPTION: IN SEMI-CONCEALED LOCATIONS BEYOND 3'-0" FROM THE HVAC UNIT, PROVIDE FLEXIBLE ROUND 2 -PLY POLYESTER DUCT WITH COILED WIRE REINFORCING AND 1 1/2" FIBERGLASS INSULATION AND POLYETHYLENE JACKET, OR RIGID 1" FIBERGLASS BOARD WITH FOIL VAPOR BARRIER FORMED INTO RECTANGULAR DUCTS.
    - [ ] SHEET METAL OPTION: PROVIDE GALVANIZED SHEET METAL DUCTWORK WITH 1" FIBERGLASS INSULATION WITH VAPOR BARRIER.
    - [ ] OTHER

    ALL DUCTWORK TO CONFORM TO CURRENT SMACNA MANUAL, CMC, NFPA 90-A AND B, AND HAVE SMACNA CLASS-1 RATING.
37. ELECTRICAL PANELS
    SEE ELECTRICAL PANEL SCHEDULE FOR SIZE.
    - [x] SINGLE PHASE POWER
    - [ ] THREE PHASE POWER
38. ELECTRICAL OUTLETS
    LOCATE PER FLOOR PLANS AT +15"MIN.- 18" MAX. A.F.F. U.O.N.
    - [x] DUPLEX OUTLETS, LEVITON 5352-1 OR EQUAL
    - [ ] OTHER
39. EXTERIOR LIGHTING
    - [ ] INCANDESCENT, WEATHER-PROOF VANDAL-RESISTANT HOUSING, WITH 60WATT LAMP, FAIL-SAFE IBO-102 OR EQUAL
    - [ ] FLUORESCENT, WEATHER-PROOF VANDAL-RESISTANT HOUSING, WITH TWO 7WATT LAMPS, FAIL-SAFE FBP-142 OR EQUAL
    - [x] OTHER ALUMINUM NIGHT LIGHT
40. INTERIOR LIGHTING
    PLASTIC LENS FIRE RATING CONFORMING TO ASTM D635
    - [x] LAY-IN 3-LAMP, FLUORESCENT, 2'-0" x 4'-0", WITH 34 WATT ENERGY SAVER LAMPS, LITHONIA 2GT-340 OR EQUAL
    - [ ] LAY-IN 2-LAMP, FLUORESCENT, 2'-0" x 4'-0", WITH 34 WATT ENERGY SAVER LAMPS, LITHONIA 2GT-240 OR EQUAL
    - [ ] LAY-IN 4-LAMP, FLUORESCENT, 2'-0" x 4'-0", WITH 34 WATT ENERGY SAVER LAMPS, LITHONIA 2GT-440 OR EQUAL
    - [ ] OTHER
41. CLOCK
    - [x] 12" DIAMETER, ACCUTREC 2012BE OR EQUAL
    - [ ] OTHER
42. FIRE ALARM SYSTEM
    - [x] PROVIDE 1/2" EMT CONDUIT AND COVERED METAL JUNCTION BOXES, LOCATE PER ELECTRICAL FLOOR PLAN, FOR FIRE WIRE AND EQUIPMENT BY OTHERS.
    - [ ] OTHER
43. COMMUNICATIONS SYSTEM
    - [ ] SPECIFY:
44. CASEWORK - WOOD WORK INSTITUTE OF AMERICA (WIC) CUSTOM GRADE
    - [ ] WOOD
      SOLID OAK FACE FRAMES, FLAT PANEL OAK DOORS AND DRAWER FRONTS, CLEAR LACQUER FINISH. MELAMINE/PARTICLE BOARD BOXES, WITH LAMINATE COUNTER TOPS, LAYOUT PER FLOOR PLAN AND CASEWORK ELEVATIONS.
    - [x] LAMINATE
      FULL OVERLAY STYLE DOORS AND DRAWER FRONTS, MELAMINE/PARTICLE BOARD BOXES, WITH LAMINATE COUNTER TOPS, LAYOUT PER FLOOR PLAN AND CASEWORK ELEVATIONS
    - [ ] OTHER
45. PLUMBING
    - [x] SEE ATTACHED PLUMBING AND RESTROOM ACCESSORIES SPECIFICATIONS, SHEET P1
46. RESTROOM ACCESSORIES
    - [ ] SEE ATTACHED PLUMBING AND RESTROOM ACCESSORIES SPECIFICATIONS, SHEET P1

LICENSED ARCHITECT
MICHELLE L. McALLISTER
C-17250
REN. 2/28/17
STATE OF CALIFORNIA

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC MT FLS 12 SS 65L
DATE 4-7-2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 110533
AC SFR 12 SS KB
DATE 4-1-03

REVISIONS

PC

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
02 101487
AC FLS SS
DATE 4/07

DIVISION OF STATE ARCHITECT

ENGINEER

ARCHITECT

LICENSED ARCHITECT
MICHAEL L. McALLISTER
C-18752
EXP. 07/31/01
STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

~~12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'~~
RELOCATABLE BUILDINGS
FOUNDATIONS CITY U.S.D.
MARTIN ALBERSON ELEMENTARY

GENERAL SPECIFICATIONS

DRAWN	TDL/CLP
CHECKED	TLV
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	0313
FILE	P269A4

A4

GENERAL PLUMBING SPECIFICATIONS

A. PLUMBING EQUIPMENT, FIXTURE AND ACCESSORIES:
FURNISH AND INSTALL ALL PIPING, VALVES, VENTS, STOPS AND TRAPS REQUIRED TO CONNECT ALL FIXTURES AND EQUIPMENT. PROVIDE ALL ELECTRICAL CONNECTIONS AS REQUIRED.

B. MATERIALS AND WORKMANSHIP:
ALL WORKMEN SHALL BE SKILLED AND QUALIFIED FOR THE WORK WHICH THEY PERFORM. ALL MATERIALS USED, UNLESS OTHERWISE SPECIFIED, SHALL BE NEW AND OF THE TYPES AND GRADE SPECIFIED.

WORKMANSHIP SHALL BE EQUAL OF BETTER IN QUALITY TO THAT REQUIRED BY THE CONSTRUCTION TRADES FOR A FINISHED PRODUCT.

IN EACH OF THE SECTIONS FOLLOWING, ONE OF THE ITEMS MUST BE CHECKED AS BEING APPLICABLE TO THIS BUILDING. ALL ITEMS NOTED AS STRUCTURAL MUST MEET THE MINIMUM STRUCTURAL REQUIREMENTS SET FORTH IN THE STRUCTURAL DRAWINGS AND NOTES.

C. WASTE LINE SHALL BE CAST IRON, NO HUB, U.O.N.

D. HOT & COLD WATER PIPING SHALL BE TYPE L, HARD COPPER

VARIABLE PLUMBING SPECIFICATIONS

1. WATER CLOSETS
   - [] HANDICAP 18"H TANK/BOWL, 1.6 GPF, KOHLER K-3427-ET OR EQUAL (HANDICAP FOR ADULT, HIGH SCHOOL AND MIDDLE SCHOOL)
   - [] STANDARD 14"H TANK/BOWL, 1.6 GPF, KOHLER K-3422-ET OR EQUAL (HANDICAP FOR ELEMENTARY SCHOOL AND GENERAL USE)
   - [] WALL HUNG FV/BOWL, 1.6 GPF, KOHLER K-4330-ET WITH ZURN Z-6000 FLUSH VALVE OR EQUAL
   - [] OTHER _____

2. URINALS
   - [] WALL HUNG, 1.0 GPF, KOHLER K-5016 WITH ZURN Z-6003 FLUSH VALVE OR EQUAL
   - [] OTHER _____

3. LAVATORIES
   - [] WALL HUNG, 14x12, GERBER 12-354 WITH DELTA FAUCET 523 .5gpm OR EQUAL, HC ACCESSIBLE
   - [] WALL HUNG, 19x17, GERBER 12-314 WITH DELTA FAUCET 523 .5gpm OR EQUAL, HC ACCESSIBLE
   - [] WALL HUNG, 20x18, KOHLER K-2032 WITH DELTA FAUCET 523 .5gpm OR EQUAL, HC ACCESSIBLE
   - [] OTHER _____

4. SINKS
   - [x] CLASSROOM 25x17, 18GA. STAINLESS STEEL, JUST CRA-1725-A-GR, WITH FISHER 3016 LEVER HANDLE COLD ONLY GOOSENECK FAUCET, AND JUST JBB-10 LEVER HANDLE DRINKING BUBBLER OR EQUALS
   - [] CLASSROOM 31x19, 18GA. STAINLESS STEEL, JUST CRA-1931-A-GR, WITH KOHLER K-7894 LEVER HANDLE HOT & COLD GOOSENECK FAUCET & JUST JBB-10 LEVER HANDLE DRINKING BUBBLER OR EQUALS
   - [] KITCHEN DOUBLE BOWL 33x21, MINIMUM 20GA. STAINLESS STEEL, JUST DL-2133-B-GR WITH KOHLER K-15171-CP SINGLE HANDLE SWING SPOUT HOT AND COLD FAUCET OR EQUALS
   - [] OTHER _____

5. GARBAGE DISPOSERS
   - [] BATCH-FEED, 3/4HP, IN-SINK-ERATOR #17 OR EQUAL
   - [] CONTINUOUS FEED, 1/2HP, IN-SINK-ERATOR BADGER-V OR EQUAL

6. DRINKING FOUNTAIN
   - [] WALL HUNG, STAINLESS STEEL, HANDICAP ACCESSIBLE, PUSH BOTTON OPERATION, HAWS 1109 OR EQUAL
   - [] OTHER _____

7. WATER HEATERS
   - [] 2.5 GALLON, 120V RHEEM 81VP2S OR EQUAL
   - [] 6 GALLON, 120V RHEEM 81VP6S OR EQUAL
   - [] 10 GALLON, 120V UNDER COUNTER, RHEEM 81VP10S OR EQUAL
   - [] 20 GALLON, 120V UNDER COUNTER, RHEEM 81VP20S OR EQUAL
   - [] OTHER _____

8. GRAB BARS
   - [] ONE EACH 36" AND 42" LONG PER HANDICAP WC, 1-1/2" DIAMETER, STAINLESS STEEL, CONCEALED VANDAL RESISTANT MOUNTING, BOBRICK B-6206 OR EQUAL
   - [] OTHER _____

9. TOILET PAPER DISPENSERS
   - [] ROLL TYPE, STAINLESS STEEL, CONCEALED VANDAL RESISTANT MOUNTING AND SPINDLE, BOBRICK B-685.60 OR EQUAL
   - [] OTHER _____

10. PAPER TOWEL DISPENSERS
    - [] FOLDED TISSUE TYPE, STAINLESS STEEL, CONCEALED VANDAL RESISTANT MOUNTING AND LOCK, BOBRICK B-262 OR EQUAL
    - [] OTHER _____

11. SOAP DISPENSERS
    - [] LIQUID TYPE, STAINLESS STEEL, CONCEALED VANDAL RESISTANT MOUNTING AND LOCK, BOBRICK B-4112 OR EQUAL
    - [] OTHER _____

12. MIRRORS
    - [] 18x30, 1/4" PLATE GLASS, STAINLESS STEEL CHANNEL FRAME, CONCEALED VANDAL RESISTANT MOUNTING, BOBRICK B-165 OR EQUAL
    - [] OTHER _____

13. RESTROOM PARTITIONS
    FLOOR AND WALL MOUNTED W/ OVERHEAD BRACE PER MFR., LAYOUT PER FLOOR PLAN
    - [] STEEL WITH BAKED ENAMEL FINISH, KNICKERBOCKER OR EQUAL
    - [] OTHER _____

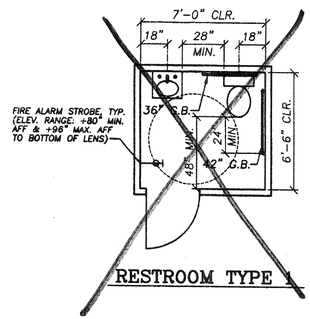
14. EXHAUST/VENTILATOR FAN
    SWITCH CONTROLLED AT MAX. 48" A.F.F., HANDICAP ACCESSIBLE WITH WEATHERPROOF SCREENED WALL CAP
    - [] CEILING/WALL FAN - 50cfm, 2.0sones, BROAN 688 OR EQUAL
    - [] WALL VENTILATOR - 180cfm, 5.0sones, BROAN 509 OR EQUAL
    - [] OTHER _____

15. OPTIONAL EXTRA ITEMS AND HARDWARE
    - [] SPECIFY: _____

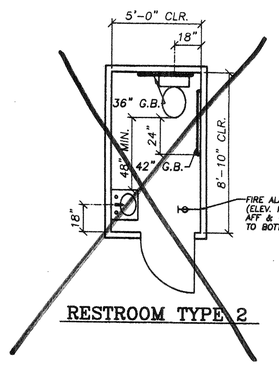
PLUMBING NOTES

1. ALL VENTS TO ROOF AND VENT RISER CONNECTIONS TO BE OFFSET ABOVE CEILING FROM WALLS IN ORDER TO PREVENT PENETRATION THROUGH TOP PLATES.
2. FOR ALLOWABLE CUTTING/NOTCHING/BORED HOLES IN 2x WALL STUDS AND JOISTS, SEE TYPICAL DETAILS ON SHEET S0.2.
3. TOILET CURB ON FLOORS: FOR TOILET ROOMS WITH MORE THAN TWO (2) FIXTURES IN RELOCATABLE BUILDINGS, PROVIDE CONTINUOUS VINYL FLOORING. ARMSTRONG "RHINO 90402" OR EQUAL, WITH FULLY SEALED JOINTS. VINYL FLOORING TO EXTEND A MIN. OF SIX (6) INCHES UP THE STUD WALL FROM THE FINISH FLOOR LEVEL. (REF: IR 23-3)
4. ALL DRAIN AND SEWER FITTINGS BELOW FLOOR LINE SITE INSTALLED.
5. SEWER/WATER STUB OUTS: SHALL BE LOCATED AS SHOWN ON PLANS AND CONNECTIONS SHOULD BE EASILY ACCESSIBLE FOR FUTURE RELOCATION. STUB OUT HEIGHT SHOULD BE COORDINATED WITH BUILDING MANUFACTURER AND SITE CONTRACTOR/OWNER.
6. PLUMBING FOR TOILETS SHALL BE IN ACCORDANCE WITH THE 1998 CPC.

THE DRAWINGS BELOW ONLY ILLUSTRATE THE SPECIFIC REQUIREMENTS FOR INSTALLING THE FIXTURES AND THE ACCESSORIES SHOWN.
SEE PROJECT SPECIFICATIONS FOR THE ACCESSORIES AND FIXTURES THAT APPLY TO THIS PROJECT.



RESTROOM TYPE 1



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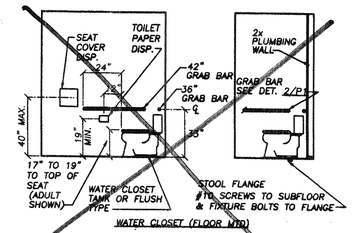
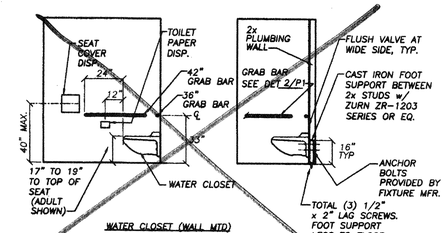


1A ACCESS/ATTACH DETAIL

[ ] SEE VARIABLE SPEC. ITEM NO. 1

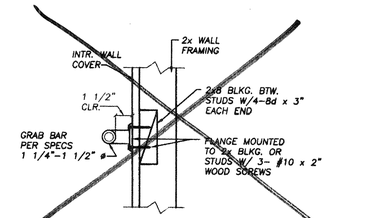
[ ] NOT USED THIS PROJECT



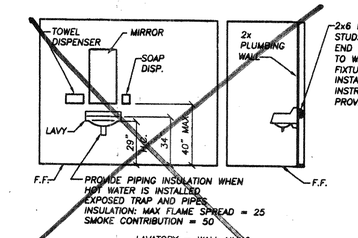
1B ACCESS/ATTACH DETAIL

[ ] SEE VARIABLE SPEC. ITEM NO. 1

[ ] NOT USED THIS PROJECT



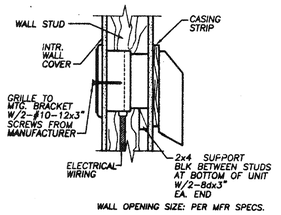
2 GRAB BAR ATTACHMENT DET.



3 ACCESS/ATTACH DETAIL

[ ] SEE VARIABLE SPEC. ITEM NO. 3

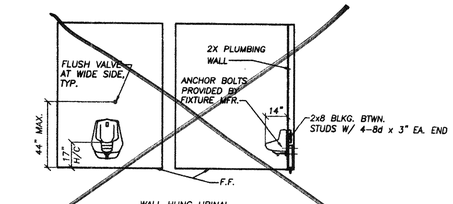
[ ] NOT USED THIS PROJECT



4 WALL EXHAUST FAN ATTACHMENT

[ ] SEE VARIABLE SPEC. ITEM NO. 15

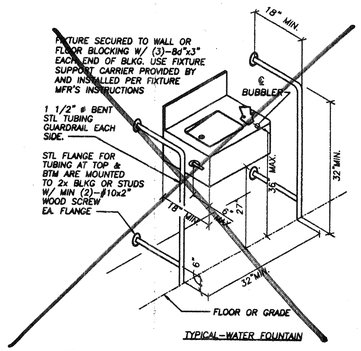
[ ] NOT USED THIS PROJECT



5 ACCESS/ATTACH DET

[ ] SEE VARIABLE SPEC. ITEM NO. 2

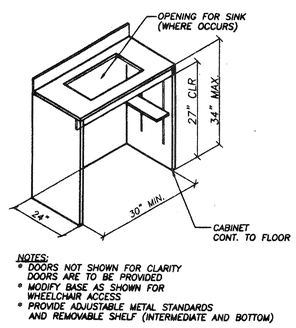
[ ] NOT USED THIS PROJECT



6 ACCESS WATER FOUNTAIN

[ ] SEE VARIABLE SPEC. ITEM NO. 6

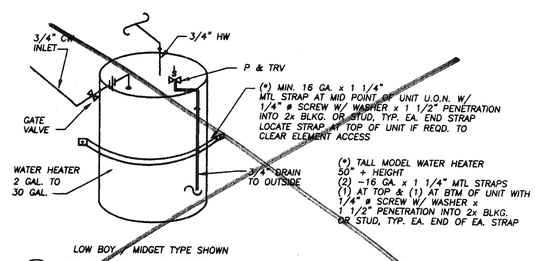
[ ] NOT USED THIS PROJECT



7 ACCESSIBLE CABINET

[ ] SEE VARIABLE SPEC. ITEM NO. 4

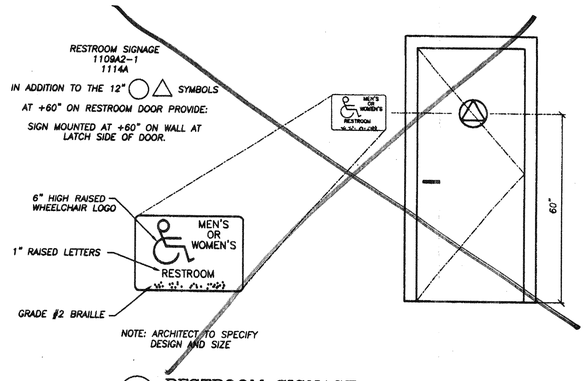
[ ] NOT USED THIS PROJECT



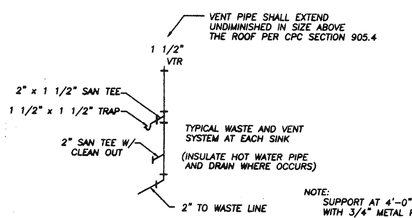
8 WATER HEATER

[ ] SEE VARIABLE SPEC. ITEM NO. 7

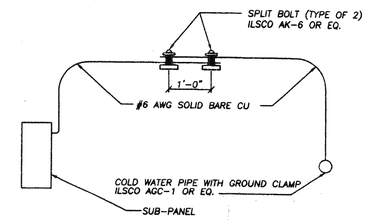
[ ] NOT USED THIS PROJECT



9 RESTROOM SIGNAGE



10 PLUMBING FOR SINK
N.T.S.



11 ALT. WATER BOND CONNECTION
N.T.S.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115937
AC MT FLS 12 SS KR
DATE 4-7-2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 105033
AC FS KR
DATE 4-1-03

REVISIONS

PC

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
02 101487
AC FLS RK
DATE 4/8/99

DIVISION OF STATE ARCHITECT

ENGINEER

ARCHITECT

LICENSED ARCHITECT
MICHAEL A. McALLISTER
C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

~~12'x40', 24'x40', 36'x40', 40'x40', 60'x40', 72'x40'~~
RELOCATABLE BUILDINGS
Modesto Unified School District
STANDARD PLUMBING SPECIFICATIONS AND DETAILS

DRAWN	CLP/TDL
CHECKED	JTD
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	0213
FILE	P269P1

P1

GENERAL NOTES:

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH THE 1998 EDITION OF THE CALIFORNIA BUILDING CODE, CCR TITLE 24, PART 2 (CBC) AND CCR TITLE 24, PART 1, CHAPTER 4, GROUP 1, LATEST REVISIONS (MODIFICATIONS TO THE 1997 UNIFORM BUILDING CODE (UBC), UBC STANDARDS AND UBC RECOGNIZED STANDARDS. – NOTE: ALL UBC RECOGNIZED STANDARDS AS APPLICABLE ARE REQUIRED FOR THIS PROJECT.) ALSO REFER TO THE DIVISION OF THE STATE ARCHITECT – STRUCTURAL SAFETY SECTION "INTERPRETATIONS OF REGULATIONS". SEE ESPECIALLY IR 16–3 AND 16–12. THESE STRUCTURES ARE DESIGNED PER THE MODIFIED REQUIREMENTS TEMPORARY FOUNDATIONS (U.O.N.).
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING DURING CONSTRUCTION AND SHALL PROVIDE ADEQUATE SHORING AND BRACING DURING CONSTRUCTION. CONTRACTOR SHALL COMPLY WITH APPLICABLE SAFETY REGULATIONS.
3. DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO DETAILS FOR SIMILAR CONSTRUCTION SHOWN ON THESE DRAWINGS.
4. THE CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE OWNER AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
5. NO STRUCTURAL MEMBERS SHALL BE CUT, NOTCHED OR OTHERWISE PENETRATED UNLESS SPECIFICALLY APPROVED BY THE ARCHITECT IN ADVANCE OR SHOWN ON THESE DRAWINGS.
6. TYPICAL DETAILS SHALL APPLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
7. WHERE THESE GENERAL NOTES AND TYPICAL DETAILS ARE IN CONFLICT WITH THE SPECIFICATIONS, THESE GENERAL NOTES AND TYPICAL DETAILS SHALL GOVERN.
8. PROVIDE OPENINGS, CURBS, FRAMING AND/OR SUPPORTS FOR ITEMS INDICATED ON ARCHITECTURAL, MECHANICAL, ELECTRICAL OR OTHER DRAWINGS INCLUDED IN CONSTRUCTION DOCUMENTS.
9. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND OTHER INFORMATION NOT SPECIFICALLY SHOWN ON STRUCTURAL DRAWINGS.
10. ALL ELEVATIONS ARE REFERENCED FROM TOP OF FINISHED FIRST FLOOR ELEVATION = 0'–0".
11. PROVIDE INSPECTIONS, TESTS AND REPORTS IN ACCORDANCE WITH CCR TITLE 24, PART 2 AND CCR TITLE 24, PART 1, CHAPTER 4, GROUP 1.
12. IN ADDITION TO CONTINUOUS PROJECT INSPECTION, THE FOLLOWING SPECIAL INSPECTIONS SHALL BE REQUIRED, AS A MINIMUM:
    A. INSPECTION OF ALL WELDING FOR STRUCTURAL STEEL, CBC SECTION 2231A.5.
    B. INSPECTION FOR CONCRETE AND CONCRETE REINFORCEMENT PLACEMENT, PER TITLE 24, PART 1, CHAPTER 4, GROUP 1 AND CBC SECTION 1701A.
13. ALL REQUIRED INSPECTIONS AND TESTS ARE THE RESPONSIBILITY OF THE OWNER. ALL INSPECTORS SHALL PROVIDE REPORTS AS REQUIRED BY TITLE 24, PART 1, CHAPTER 4, GROUP 1.
14. DIMENSIONS AND ELEVATIONS SHOWN ARE APPROXIMATE AND ARE PROVIDED AS AN AID IN INTERPRETING THE DRAWINGS ONLY. DIMENSIONS AND ELEVATIONS MUST BE VERIFIED WITH ARCHITECTURAL DRAWINGS. IN THE EVENT OF CONFLICT, DIMENSIONS AND ELEVATIONS SHOWN ON ARCHITECTURAL DRAWINGS SHALL GOVERN. DRAWING SCALES GIVEN ARE APPROXIMATE – DO NOT SCALE PLANS OR DETAILS.
15. WHEN MODULE IS RELOCATED – DO NOT RE–INSTALL NAILS OR SCREWS IN EXISTING HOLES.

WOOD:

1. STRUCTURAL FRAMING SHALL BE DOUGLAS FIR – LARCH GRADED IN ACCORDANCE WITH THE STANDARD GRADING RULES OF THE WESTERN WOOD PRODUCTS ASSOCIATION OR STANDARD GRADING RULES NO. 17 OF THE WEST COAST LUMBER INSPECTION BUREAU, LATEST EDITIONS. GRADES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DRAWINGS. (DOUGLAS FIR SOUTH IS NOT ALLOWED.) EACH PIECE SHALL BE GRADE MARKED AND NO PIECE MAY FALL BELOW GRADES INDICATED.
   ALL FRAMING EXCEPT AS NOTED –NO. 2
2. PLYWOOD SHALL BE AS SHOWN ON THESE DRAWINGS WITH EXTERIOR GLUE IN ACCORDANCE WITH U.S. PRODUCT STANDARD PS 1–95. ALL PANELS SHALL BE MARKED WITH AN APA GRADE MARK WITH AN IDENTIFICATION INDEX AS SHOWN ON DRAWINGS. USE 4'x8' PANELS, MINIMUM, EXCEPT AT BOUNDARIES AND FRAMING CHANGES WHERE MINIMUM PANEL DIMENSION SHALL BE 24" AT ROOFS AND FLOORS AND 12" AT WALLS.
3. WHERE WALLS OR PARTITIONS ARE SUPPORTED BY WOOD JOISTS, PROVIDE ADDITIONAL 2x8 JOIST WITH LU26 JOIST HANGER EACH END OF JOIST UNDER PARTITIONS PARALLEL TO JOISTS.
4. BOLTS FOR TIMBER CONNECTIONS SHALL CONFORM TO ANSI/ASME STANDARD B18.2.1–1981 AND 1991 EDITION OF THE NDS. BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION BY THE NATIONAL FOREST PRODUCTS ASSOCIATION (NDS). BOLT HOLES SHALL BE 1/32 TO 1/16 INCH LARGER THAN BOLT DIAMETER. RE–TIGHTEN BOLTS BEFORE CLOSING IN WORK. BOLTS SHALL BE FULL BODY STEEL BOLTS WITH MINIMUM YIELD STRENGTH OF 45,000 PSI.
5. LAG SCREWS SHALL BE STEEL AND CONFORM TO ANSI/ASME STANDARD B18.2.1 AND THE REQUIREMENTS OF THE 1991 NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS). HOLES FOR LAG SCREW SHANKS SHALL BE BORED THE SAME DEPTH AND DIAMETER AS THE SHANK. THE REMAINING DEPTH OF PENETRATION OF THE SCREW SHALL BE BORED TO 70% OF THE SHANK DIAMETER. ONE QUARTER INCH (1/4") DIAMETER LAG SCREWS NEED NOT HAVE PRE–DRILLED HOLES IF IT CAN BE SHOWN THAT THE WOOD MEMBERS ARE NOT DAMAGED DURING INSTALLATION. PROVIDE FULL DIAMETER BODY LAG SCREWS WITH BENDING YIELD STRENGTHS PER TABLES 9.3 IN NDS.
6. PROVIDE MALLEABLE IRON WASHERS OR EQUIVALENT CUT PLATE WASHERS (NOT LESS THAN A STANDARD CUT WASHER) UNDER NUTS AND BOLT OR LAG SCREW HEADS WHICH BEAR ON WOOD.
7. PROVIDE MIN. 2"x2"x3/16" PLATE WASHER AT EA. SILL BOLT PER CBC SECTION 1806A.6.1
8. WOOD SCREWS SHALL CONFORM TO ANSI/ASME STANDARD B18.6.1 AND THE REQUIREMENTS OF THE 1991 NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION BY THE NATIONAL FOREST PRODUCTS ASSOCIATION (NDS). GALVANIZED OR OTHER CORROSION RESISTANT COATING WHERE EXPOSED TO WEATHER OR USED IN FOUNDATIONS. SCREWS SHALL BE STEEL WITH CUT THREADS AND BENDING YIELD STRENGTHS PER TABLES 11.3 IN NDS.
9. WOOD MEMBERS SHALL BE CUT OR NOTCHED ONLY AS SHOWN ON STRUCTURAL DRAWINGS.
10. WHEN REQUIRED NAILING TENDS TO SPLIT WOOD MEMBERS, NAIL HOLES SHALL BE PRE–BORED TO 3/4 OF THE NAIL DIAMETER.
11. STRUCTURAL NAILING SHALL BE WITH FULL HEAD COMMON NAILS PER ALL REQUIREMENTS OF THE 1991 NDS. NAILING NOT SPECIFICALLY INDICATED SHALL COMPLY WITH CBC TABLE 23A–I–B–1. ALL NAILS EXPOSED TO WEATHER, IN DIRECT GROUND CONTACT FOUNDATION MEMBERS AND AS NOTED ON PLANS, SHALL HAVE A GALVANIZED COATING OF NOT LESS THAN 1.0 OZ. OF ZINC PER SQUARE FOOT OR DSA APPROVED CORROSION RESISTANT EQUIVALENT (E. SENCO "WEATHEREX" NAILS, APPROVED BY DSA OCTOBER 1999) PER THE REQUIREMENTS OF THE CBC, WITH MINIMUM BENDING YIELDS PER TABLE 12.3B IN NDS. (SEE NAIL EQUIVALENCE BELOW.)
12. NAIL EQUIVALENCE: (PROVIDE MINIMUM NAIL LENGTHS AS REQUIRED FOR SPECIFIED PENETRATION, TYP. U.O.N.)
    6d EQUALS .113" DIA. – PROVIDE 1.24" MIN. POINT PENETRATION
    8d EQUALS .131" DIA. – PROVIDE 1.44" MIN. POINT PENETRATION
    10d EQUALS .148" DIA. – PROVIDE 1.63" MIN. POINT PENETRATION
    16d EQUALS .162" DIA. – PROVIDE 1.78" MIN. POINT PENETRATION
    * 1 1/2" AT 2x MEMBERS
13. NAILING OF BLOCKING FOR FLOOR AND ROOF FRAMING MEMBERS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE ON THE DRAWINGS:
    BLOCKING TO FLOOR OR ROOF FRAMING: 4–10d TOENAILS EACH END OR 4–8d x 3" END NAILS.
14. PROVIDE CROSS BRIDGING, SOLID BRIDGING OR OTHER LATERAL SUPPORT FOR ALL FRAMING MEMBERS IN ACCORDANCE WITH THE REQUIREMENTS OF CBC SECTIONS 2316A.2.20, 2316A.2.21 AND 2316A.2.22. PROVIDE 2x8 SOLID BLOCKING FOR FLOOR FRAMING MEMBERS AT MID SPAN.
15. CONNECTOR HARDWARE SHALL BE BY THE SIMPSON COMPANY, SAN LEANDRO, CALIFORNIA, OR APPROVED EQUAL. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR MAXIMUM RATED LOADS, EXCEPT WHERE NOTED OTHERWISE ON PLANS.
16. MICRO–LAM LAMINATED VENEER BEAMS SHALL BE MIN. 2.0E GRADE (Fb=2485 PSI) UNLESS NOTED OTHERWISE ON THE DRAWINGS, AS MANUFACTURED BY TRUS JOIST CORP. OF BOISE, IDAHO. SEE COUNCIL OF AMERICAN BUILDING OFFICIALS REPORT NO. NER–126.
17. EXCEPT WHERE MORE STRINGENT CONSTRUCTION IS SHOWN ON THE DRAWINGS, WOOD CONSTRUCTION SHALL COMPLY WITH CBC SECTION 2320A, CONVENTIONAL LIGHT–FRAME CONSTRUCTION PROVISIONS, AS A MINIMUM.
18. PRESSURE PRESERVATIVE TREATMENT SHALL BE PER CBC SECTION 2303A.3. PROVIDE QUALITY MARK ON ALL TREATED FOUNDATION MEMBERS FROM AGENCY APPROVED BY DSA. ALL FOUNDATION MEMBERS SHALL BE MARKED AS "FOR GROUND CONTACT (LP22)" OR "FOR ABOVE GROUND USE (LP2)" AS APPROPRIATE. TREAT ALL CUT ENDS AND BORED HOLES OF PRESSURE TREATED MEMBERS WITH AN APPROVED PRESERVATIVE. (WILLARD W/B COPPER GREEN 2% OR AN APPROVED EQUIVALENT). WHERE NOTED, MEMBERS BELOW THE SUB FLOOR THAT ARE NOT A PART OF THE FOUNDATION SHALL BE PRESSURE TREATED PER LP2. A QUALITY CONTROL STAMP IS NOT REQUIRED FOR STRUCTURAL MEMBERS BELOW THE SUB FLOOR THAT ARE NOT PART OF THE FOUNDATION.
19. IF MACHINE NAILING IS UTILIZED FOR THIS PROJECT, CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF CBC SECTIONS 2318A.3.3 AND 2315A.3.3. MACHINE NAILING IS SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER OR ARCHITECT AND THE DIVISION OF THE STATE ARCHITECT.
20. POWDER DRIVEN FASTENERS SHALL BE BY HILTI, INC., HILTI FASTENING SYSTEMS, OR APPROVED EQUAL. INSTALL IN ACCORDANCE WITH DRAWINGS AND THE MANUFACTURER'S RECOMMENDATIONS AND ICBO APPROVALS.

CONCRETE:

1. CONCRETE SHALL DEVELOP A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS IN ACCORDANCE WITH ASTM C31 AND C39. TESTING SHALL BE IN ACCORDANCE WITH CBC SECTION 1905A.6. THREE CYLINDERS FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN BY THE OWNER'S TESTING LABORATORY NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 50 CUBIC YARDS OF CONCRETE PLACED. PROVIDE 6% ENTRAINED AIR BY VOLUME WITH ADMIXTURE PER ASTM C260 FOR SITES ABOVE 1500 FEET IN ELEVATION. SEE ALSO CBC SECTION 1904A.2.
2. ALL CONCRETE SHALL BE CONSOLIDATED BY MECHANICAL VIBRATORS.
3. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CBC AND ACI STANDARD 318, LATEST EDITION, OF THE AMERICAN CONCRETE INSTITUTE, UNLESS SHOWN OR NOTED OTHERWISE ON THESE DRAWINGS.
4. AGGREGATE SHALL CONFORM TO ASTM C33 AND CBC SECTION 1903A.3. (1" MAX. AGGREGATE).
5. CEMENT SHALL BE ASTM C150, TYPE I OR TYPE II. SEE ALSO REQUIREMENTS OF CBC SECTION 1903A.2.
6. REINFORCING STEEL SHALL BE DEFORMED CONFORMING TO ASTM A615 GRADE 40 UNLESS OTHERWISE NOTED.
7. WELDED WIRE FABRIC REINFORCEMENT SHALL CONFORM TO ASTM A185.
8. WELDING OF REINFORCING STEEL SHALL BE PERFORMED ONLY WHERE INDICATED ON THE DRAWINGS AND SHALL BE IN COMPLIANCE WITH ALL ALL REQUIREMENTS OF THE CBC, UBC STANDARD 19–1 AND THE REINFORCING STEEL WELDING CODE, AWS D1.4, LATEST REVISION, OF THE AMERICAN WELDING SOCIETY. PROVIDE WELDING PROCEDURE AND MILL TEST REPORTS FOR ALL REINFORCEMENT TO BE WELDED. REINFORCING WITH C.E. ABOVE .75 SHALL NOT BE WELDED. ARCHITECT SHALL APPROVE WELDING PROCEDURE, WELDER QUALIFICATIONS AND MILL TEST REPORTS PRIOR TO EXECUTION OF WELDING. PROVIDE INSPECTION PER CBC SECTION 1929A.12.
9. COVERAGE FOR REINFORCING BARS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CBC AND ACI STANDARD 318 UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
10. LAP SPLICES FOR REINFORCING BARS SHALL BE 50 BAR DIAMETERS OR 18" MINIMUM UNLESS SHOWN OTHERWISE ON THE DRAWINGS. WIRE BARS TOGETHER AT LAPS OR SPLICES. STAGGER LAPS IN ADJACENT HORIZONTAL OR SLOPING REINFORCING BARS A MINIMUM OF THE REQUIRED SPLICE LENGTH. HOOKS AND BENDS SHALL BE STANDARD PER CBC SECTIONS 1907A.1 THROUGH 1907A.3 UNLESS SHOWN OTHERWISE. WELDED WIRE FABRIC SHALL BE SPLICED BY LAPPING A MINIMUM OF 12 INCHES OR TWO CROSS WIRES, WHICHEVER IS GREATER.
11. CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ASTM C94 AND ACI STANDARD 304. ALSO COMPLY WITH REQUIREMENTS OF CBC SECTION 1905A.
12. ALL EMBEDDED ITEMS SHALL BE PLACED ACCURATELY AND SECURED PRIOR TO BEGINNING CONCRETE PLACEMENT.
13. CONSTRUCTION JOINTS SHALL BE LOCATED SO AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE. CONSTRUCTION JOINTS SHALL COMPLY WITH CBC SECTION 1906A.4. LOCATE CONSTRUCTION JOINTS AS SHOWN ON THE DRAWINGS OR APPROVED IN ADVANCE BY THE STRUCTURAL ENGINEER AND DSA.
14. PROVIDE SHOP DRAWINGS FOR ALL REINFORCING STEEL TO ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO BEGINNING ANY FABRICATION.
15. CONTRACTOR SHALL PREPARE AND SUBMIT CONCRETE MIX DESIGNS TO THE ARCHITECT FOR APPROVAL PRIOR TO PLACEMENT OF ANY CONCRETE. CONCRETE MIX DESIGNS SHALL BE PER CBC SECTION 1905A.2, METHOD A (TABLE 19A–A–7). [ALTERNATE MIX DESIGN: METHOD B OR C MAY BE USED PER CBC SECTION 1905A.2 THROUGH 1905A.3. METHOD B OR C MIX DESIGNS SHALL BE SIGNED BY A CIVIL ENGINEER LICENSED IN CALIFORNIA.]
16. ALL GROUT SHALL BE NONMETALLIC NON–SHRINK HIGH STRENGTH GROUT BY MASTER BUILDERS OR EQUIVALENT AS APPROVED BY THE ARCHITECT. UTILIZE PRODUCTS RECOMMENDED BY THE MANUFACTURER FOR EACH APPLICATION AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
17. REINFORCING AND EMBEDMENT ITEMS SHALL BE FREE OF EXCESSIVE SCALE OR RUST, DIRT, GREASE, OIL OR ANY OTHER SUBSTANCE THAT WILL IMPAIR BOND WITH CONCRETE.
18. OWNER SHALL PROVIDE INSPECTIONS IN ACCORDANCE WITH CBC SECTIONS 1701A.5.1 AND 1701A.5.2 FOR THE PLACEMENT OF CONCRETE AND CONCRETE REINFORCEMENT. FOR BOLTS INSTALLED IN CONCRETE AND FOR SAMPLING CONCRETE. OWNER'S INSPECTOR SHALL PROVIDE INSPECTION REPORTS TO THE ARCHITECT AND THE DIVISION OF THE STATE ARCHITECT.
19. BATCH PLANT INSPECTION, AND CEMENT AND REINFORCING TESTS ARE NOT REQUIRED. THE QUANTITIES OF CONCRETE MATERIALS SHALL BE CERTIFIED BY A LICENSED WEIGHMASTER AND THE QUALITY OF MATERIALS SHALL BE VERIFIED BY THE OWNER'S TESTING AGENCY.
20. ALL CONCRETE WORK SHALL BE FORMED. CASTING OF FOUNDATION CONCRETE AGAINST SIDES OF FOOTING EXCAVATIONS SHALL NOT BE ALLOWED EXCEPT AS SPECIFICALLY APPROVED BY ARCHITECT, STRUCTURAL ENGINEER AND THE DIVISION OF THE STATE ARCHITECT. SEE DETAIL D/S3.1C

STRUCTURAL STEEL:

1. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE ASTM A36 UNLESS NOTED OTHERWISE.
2. TUBE MEMBERS SHALL BE ASTM A500 WITH MIN. YIELD STRESS OF 46,000 PSI., PIPE MEMBERS SHALL BE ASTM A53 WITH A MIN. YIELD STRESS OF 35,000 P.S.I.
3. UNLESS OTHERWISE NOTED, LIGHT GAUGE STEEL PLATE (10 GAUGE AND LESS) SHALL BE GALVANIZED AND PER THE REQUIREMENTS OF ASTM A36, ASTM A446 OR EQUAL WITH MINIMUM YIELD STRESS OF 33,000 PSI.
4. ALL BOLTS SHALL BE ASTM A307 MACHINE BOLTS UNLESS NOTED OTHERWISE.
5. ALL WELDING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE (CBC) AND THE STRUCTURAL WELDING CODE – STEEL, AWS D1.1, LATEST EDITION, OF THE AMERICAN WELDING SOCIETY. INSPECTION OF ALL WELDING SHALL BE PROVIDED, SEE NUMBER 8, BELOW.
6. FABRICATION AND ERECTION OF STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC). ALSO COMPLY WITH REQUIREMENTS OF THE AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES. (THERE ARE NO SELF–SUPPORTING FRAMES ON THIS PROJECT – TEMPORARY BRACING IS REQUIRED UNTIL ALL ELEMENTS SHOWN ON STRUCTURAL DRAWINGS ARE IN PLACE.)
7. PRIME ALL STEEL SURFACES WITH AN APPROVED PRIMER, EXCEPT SURFACES TO BE EMBEDDED IN CONCRETE AND SURFACES TO RECEIVE FIELD WELDS. TOUCH–UP FIELD WELDS AND OTHER EXPOSED STEEL SURFACES AFTER ERECTION. ALTERNATE: PROVIDE GALVANIZED PER ASTM STANDARDS.
8. PROVIDE TESTS AND INSPECTIONS IN ACCORDANCE WITH CBC SECTION 2231A. ALL STEEL SHALL BE PROPERLY IDENTIFIED PER CBC SECTION 2231A.1.

ABBREVIATIONS:

A.B.	ANCHOR BOLT	HCB	HOLLOW CONCRETE BLOCK
ABV.	ABOVE	HD	HOLDOWN
ADDL.	ADDITIONAL	HDR.	HEADER
ADJ.	ADJACENT	HK.	HOOK
ALT.	ALTERNATE	HORIZ.	HORIZONTAL
APPROX.	APPROXIMATE	H.S.	HIGH STRENGTH
ARCH.	ARCHITECTURAL		
		INFO.	INFORMATION
BLDG.	BUILDING	INTR.	INTERIOR
BLKG.	BLOCKING	INTRM.	INTERMEDIATE
BLW.	BELOW		
BM.	BEAM	JT.	JOINT
B.O.	BOTTOM OF	LCTN.	LOCATION
BOT.	BOTTOM		
B.S.	BOTH SIDES	MAX.	MAXIMUM
BTWN.	BETWEEN	MECH.	MECHANICAL
		MFR.	MANUFACTURER
C.J.	CONSTRUCTION JOINT	MIN.	MINIMUM
℄	CENTERLINE	MOD.	MODULE
CLG.	CEILING		
CLR.	CLEAR	(N)	NEW
CMU	CONCRETE MASONRY UNIT	N.S.	NEAR SIDE
COL.	COLUMN	N.T.S.	NOT TO SCALE
CONC.	CONCRETE		
CONSTR.	CONSTRUCTION	O.C.	ON CENTER
CONN.	CONNECTION	O.H.	OPPOSITE HAND/OVERHANG
CONT.	CONTINUOUS	OPNG.	OPENING
CP	COMPLETE PENETRATION	OPP.	OPPOSITE
CSK.	COUNTERSINK		
		PC.	PIECE
DBL.	DOUBLE	PL. (℗)	PLATE
DET.	DETAIL	PPT/PT	PRESSURE PRESERVATIVE
D.F.	DOUGLAS FIR		TREATED
DIAG.	DIAGONAL	P.W.	PLYWOOD
DIM.	DIMENSION		
D.O.	DITTO	REINF.	REINFORCEMENT
DRWG.	DRAWING	REQD.	REQUIRED
DIA., ø	DIAMETER	RWD.	REDWOOD
(E)	EXISTING	SHTHG.	SHEATHING
EA.	EACH	SIM.	SIMILAR
E.F.	EACH FACE	SQ.	SQUARE
E.J.	EXPANSION JOINT	STD.	STANDARD
ELEV.	ELEVATION	STG'D.	STAGGERED
E.N.	END NAIL	STIFF.	STIFFENER
EQ.	EQUAL	S.W.	SHEARWALL
EQUIP.	EQUIPMENT	SYM.	SYMMETRICAL
E.S.	EACH SIDE		
EXTR.	EXTERIOR	T&B	TOP & BOTTOM
E.W.	EACH WAY	T&G	TONGUE & GROOVE
		THRU	THROUGH
F.F.	FINISH FLOOR	T.N./TN	TOE NAIL
F.G.	FINISH GRADE	T.O.	TOP OF
FIN.	FINISH	T.O.C.	TOP OF CONCRETE
FLR.	FLOOR	T.O.S.	TOP OF STEEL
F.N.	FACE NAIL	TS	TUBE STEEL
FND.	FOUNDATION	TYP.	TYPICAL
F.O.C.	FACE OF CONCRETE		
F.O.M.	FACE OF MASONRY	U.O.N.	UNLESS OTHERWISE NOTED
F.O.S.	FACE OF STUD	VERT.	VERTICAL
F.S.	FAR SIDE		
FTG.	FOOTING	W/	WITH
GA.	GAGE	W.P.	WORK POINT
GALV.	GALVANIZED	WWF	WELDED WIRE FABRIC
G.L.	GRID LINE	WND.	WINDOW
GLB	GLU–LAM BEAM		
GYP. BD.	GYPSUM BOARD		

CONCRETE FOUNDATION:

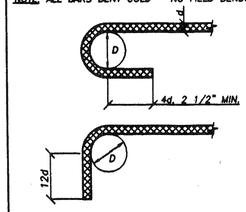
1. FOUNDATION BEARING SHALL BE AS APPROVED BY THE DIVISION OF THE STATE ARCHITECT AND THE OWNER'S ARCHITECT. IT IS THE SCHOOL DISTRICT'S RESPONSIBILITY TO PROVIDE ADEQUATE BEARING TO DEVELOP THE ALLOWABLE BEARING PRESSURE NOTED BELOW.
2. FOUNDATIONS ARE DESIGNED FOR A DEAD PLUS LIVE LOAD ALLOWABLE SOIL BEARING PRESSURE OF 1000 PSF, AS PER CBC TABLE 18A–I–A OR IR 16–3.
3. THE BOTTOM OF ALL FOOTINGS SHALL BE LEVEL. CHANGES IN FOOTING ELEVATIONS SHALL BE MADE UTILIZING THE TYPICAL FOOTING STEP DETAILS ON THESE DRAWINGS.
4. CENTER FOOTINGS UNDER WALLS OR COLUMNS UNLESS OTHERWISE INDICATED ON THESE DRAWINGS.
5. PROVIDE PROPER GRADING OF SITE SUCH THAT WATER DOES NOT POND OR OTHERWISE COLLECT UNDER THE BUILDING.
6. FOUNDATIONS ARE DESIGNED AS FIXED FOUNDATIONS IN ACCORDANCE WITH IR 16–3 OR CBC CHAPTER 18A.
   A. ALL BUILDINGS, PERMANENT OR OTHER RELOCATABLE, ADJACENT TO THESE RELOCATABLE BUILDINGS MUST BE SEPARATED FROM THESE RELOCATABLE BUILDINGS BY 2" MINIMUM.

PAD FOUNDATIONS: (RESTRAINED)

1. FOUNDATION BEARING SHALL BE AS APPROVED BY THE DIVISION OF THE STATE ARCHITECT AND THE OWNER'S ARCHITECT. IT IS THE SCHOOL DISTRICT'S RESPONSIBILITY TO PROVIDE ADEQUATE BEARING TO DEVELOP THE ALLOWABLE BEARING PRESSURE NOTED BELOW.
2. FOUNDATIONS ARE DESIGNED FOR A DEAD PLUS LIVE LOAD ALLOWABLE SOIL BEARING PRESSURE OF 1000 PSF, AS PER IR 16–3.
3. THE BOTTOM OF ALL FOOTINGS SHALL BE LEVEL. CHANGES IN FOOTING ELEVATIONS SHALL BE MADE UTILIZING THE FOOTING SHIM DETAILS ON THESE DRAWINGS.
4. CENTER FOOTINGS UNDER WALLS OR COLUMNS UNLESS OTHERWISE INDICATED ON THESE DRAWINGS.
5. PROVIDE PROPER GRADING OF SITE SUCH THAT WATER DOES NOT POND OR OTHERWISE COLLECT UNDER THE BUILDING.
6. VERIFY THAT NO PIPES, UTILITIES, OR OTHER SUCH ITEMS OCCUR BELOW FOOTINGS.
7. FOUNDATIONS ARE DESIGNED AS "RESTRAINED FOUNDATION", IN ACCORDANCE WITH IR 16–3, TEMPORARY FOUNDATIONS.
   a. ANCHOR FOOTINGS AT BUILDING PERIMETER WITH 1" ø GALVANIZED STANDARD STEEL PIPES DRIVEN FLUSH WITH TOP OF WOOD FOUNDATION PADS AND PENETRATING SOIL 12" MINIMUM AT A MAXIMUM SPACING OF 10'–0" O.C. AT SIDEWALLS AND AT EACH CORNER EACH MODULE AT ENDWALLS.
   b. STAIRS AND RAMPS SHALL BE PROPERLY ANCHORED TO BUILDING TO PREVENT SEPARATION.
   c. ALL BUILDINGS, PERMANENT OR OTHER RELOCATABLE, ADJACENT TO THESE RELOCATABLE BUILDINGS MUST BE SEPARATED FROM THESE RELOCATABLE BUILDINGS BY 2" MINIMUM.
8. FINISH GRADES SHALL BE WITHIN MAX. 18" BELOW BOTTOM OF FLOOR JOISTS, WITHOUT EXCEPTION.

TYPICAL DETAILS:

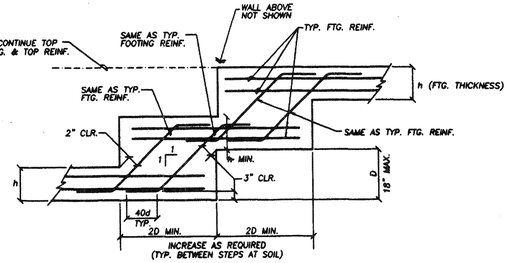
NOTE: ALL BARS BENT COLD – NO FIELD BENDING ALLOWED.



TYPICAL (U.O.N.)

INSIDE BEND DIAMETERS

BAR SIZE	D
#3 TO #8	6d
#9,#10,#11	8d
#14,#18	10d



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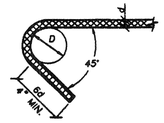
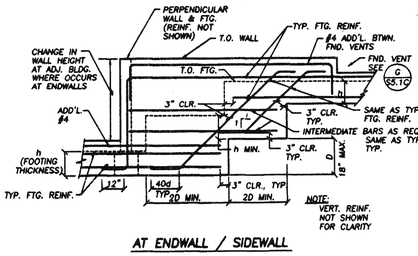


STIRRUPS & TIES

INSIDE BEND DIAMETERS

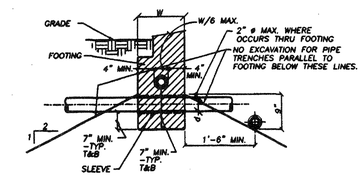
BAR SIZE	D
#3	1 1/2"
#4	2"
#5	2 1/2"



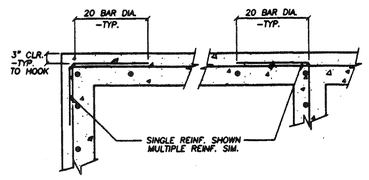
AT ENDWALL / SIDEWALL

A SO.1 STD HOOKS AND BENDS IN REINF. STEEL (05/25/93)

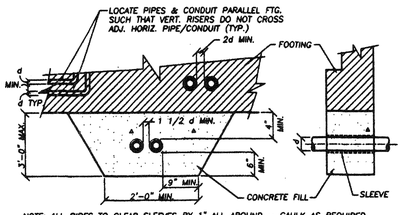
B SO.1 STEP FOOTING DETAIL (11/06/92)



NOTE: ALL PIPES TO CLR. SLEEVES BY 1" ALL AROUND –CAULK AS REQ'D



C SO.1 CONC. REINF. DETAIL (11/06/92)



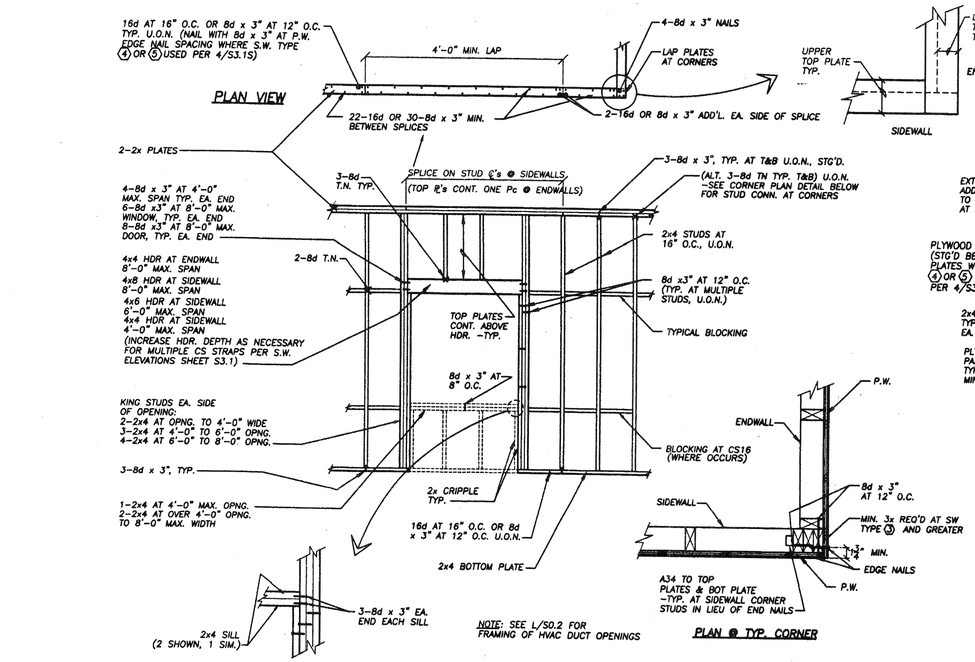
NOTE: ALL PIPES TO CLEAR SLEEVES BY 1" ALL AROUND – CAULK AS REQUIRED. PIPE NEVER TO BE NOREAD THAN 4'–6" BELOW BOTTOM OF FOOTING; STEP FOOTING IF REQUIRED PER TYPICAL STEP DETAILS.

D SO.1 PIPES AT FOOTINGS (12/30/92)

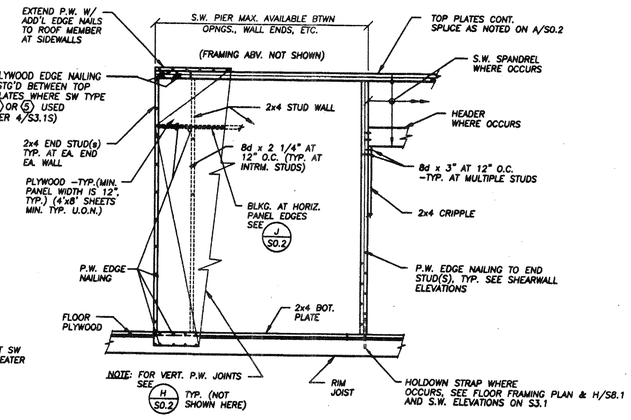
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT 02 115037 AC ___ FS ___ DATE 4-7-2016

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT 02 105033 AC ___ FS ___ DATE 4-1-03

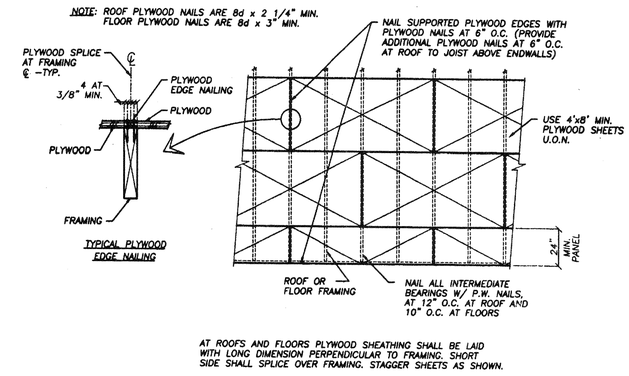
DESIGN
ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WI



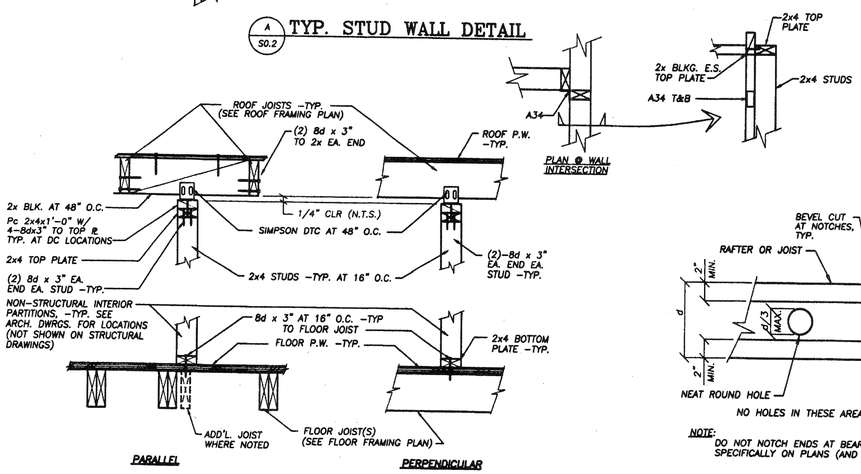
A S0.2 TYP. STUD WALL DETAIL



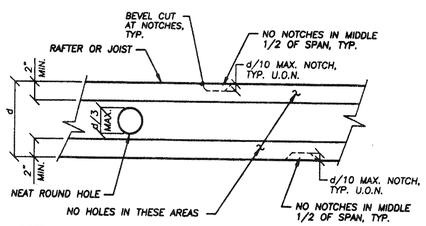
B S0.2 TYP. DET. - P.W. SHEARWALL



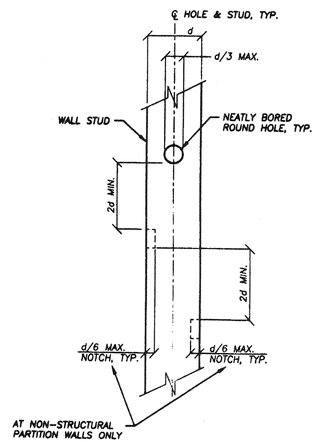
C S0.2 TYP. P.W. SHEATHING DETAIL (ROOF & FLOOR)



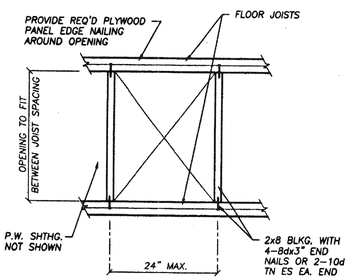
D S0.2 PARTITION WALL DETAIL (NON-BEARING)



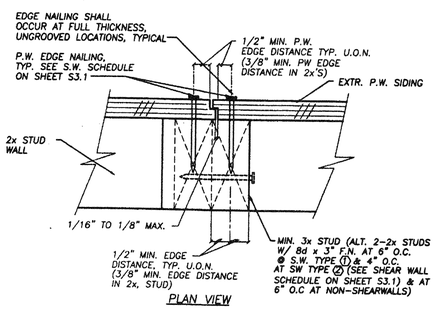
E S0.2 ALLOW. CUTS IN RAFTERS & JOISTS (APPLIES TO 2x MEMBERS ONLY -NOTCHES ALLOWED IN 4x MEMBERS ONLY AT ENDS)



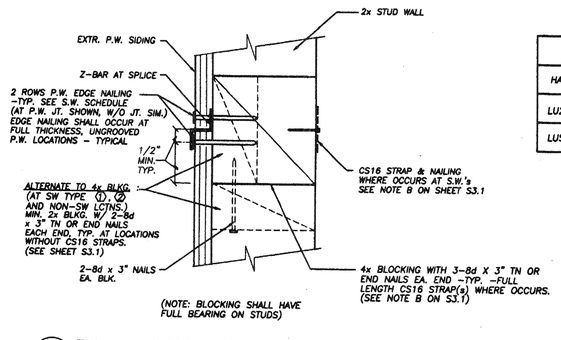
F S0.2 ALLOW. CUTS IN WALL STUDS (APPLIES TO WALLS SHOWN ON STRUCT. DRWGS. ONLY U.O.N.)



G S0.2 DET.-TYP. FLR. FRAMING @ OPNG.



H S0.2 DET. -VERT. P.W. JOINT AT WALL

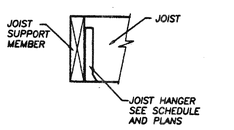


J S0.2 DET. -BLKG. AT HORIZ. WALL P.W. JOINT

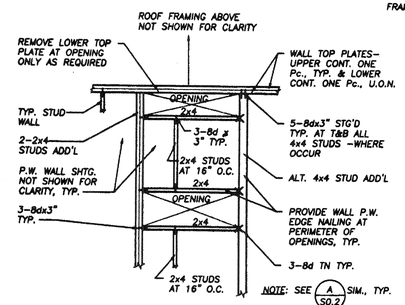
JOIST HANGER SCHEDULE

HANGER	NAILS TO JOIST *	NAILS TO JOIST * SUPPORT MEMBER
LU26	4-10d x 1 1/2"	6-10d x 1 1/2"
LUS28-2	4-16d	6-16d

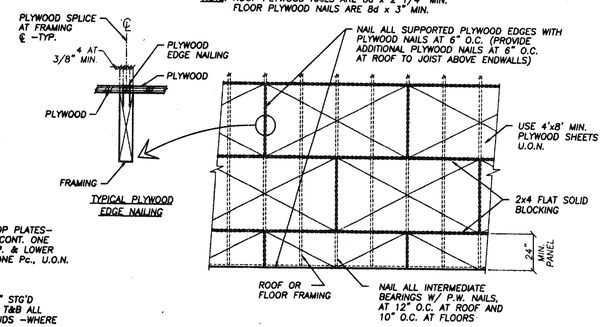
*NOTE: SEE G S8.1 TYP.



K S0.2 DET. -TYP. JOIST HANGER



L S0.2 WALL FRAMING AT HVAC DUCT OPENINGS



M S0.2 TYP. BLOCKED P.W. SHEATHING DETAIL (12'x40' BUILDING ONLY) (ROOF & FLOOR)

34-53
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC ___ FLS ___ SS 035
DATE 4-7-2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 105033
AC ___ PY ___ SS 035
DATE 4-15-03

DESIGN

ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WIND = 80 MPH ~~or C~~
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE ≥15KM

REVISIONS

PC

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICE
02 101487
AC ___ FLS ___
DATE 11/8/02

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER
TERESA LYNN VERNER
No. 044581
Exp. 03/31/02
CIVIL
STATE OF CALIFORNIA

ARCHITECT

LICENSED ARCHITECT
CHARLES A. McALLISTER
C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

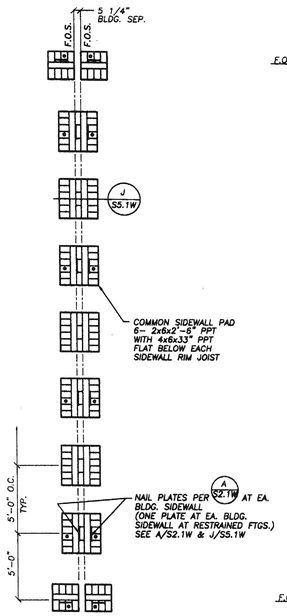
GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

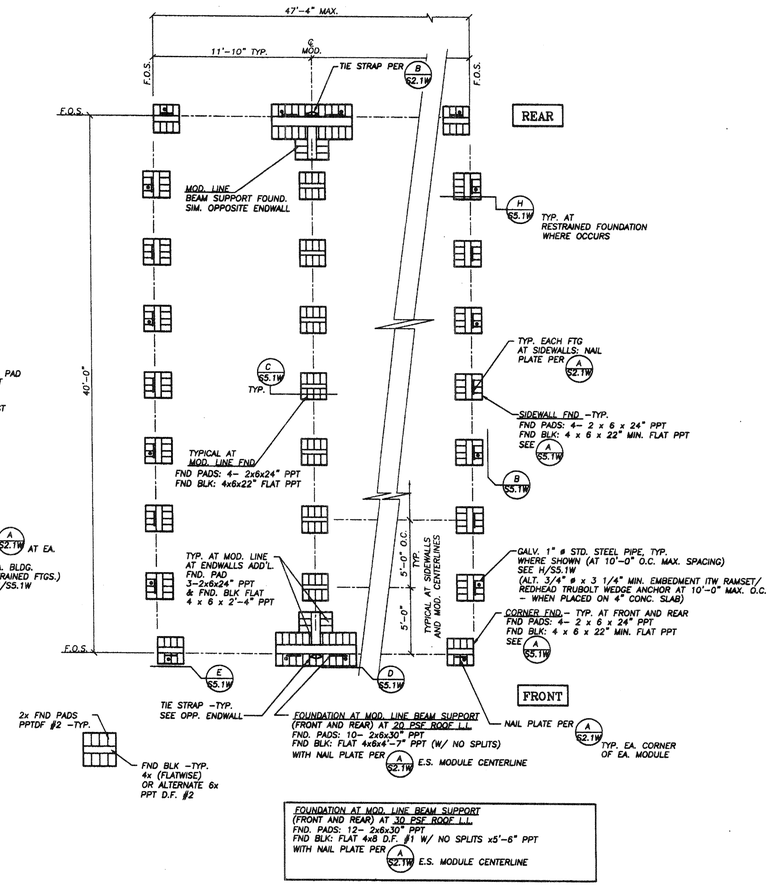
12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'
RELOCATABLE BUILDINGS
FACTORY BUILT COMMERCIAL BUILDINGS
TYPICAL DETAILS

LICENSED ARCHITECT
CHARLES A. McALLISTER
NO. C-17250
REN. 2/28/17
STATE OF CALIFORNIA

DRAWN	TDL/CLP
CHECKED	TLV
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	6693
FILE	P269S02

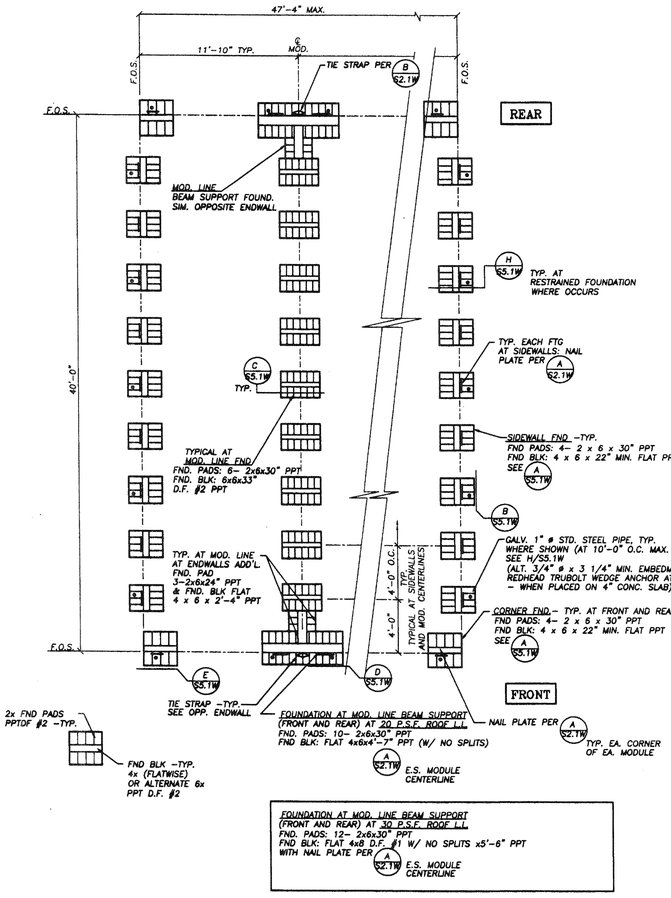
S0.2





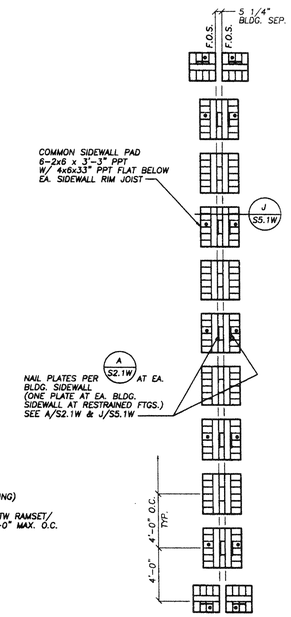
50 PSF FLOOR LIVE LOAD

50 PSF FLOOR LIVE LOAD
SOIL PRESSURE: 1000 PSF



125 PSF FLOOR LIVE LOAD

125 PSF FLOOR LIVE LOAD
SOIL PRESSURE: 1000 PSF



125 PSF FLOOR LIVE LOAD

1A S2.1W FND. AT BLDG. SEP. AT SIDEWALLS
3/16" = 1'–0"

1 S2.1W MULTI-WIDE FOUNDATION PLAN
3/16" = 1'–0"

2 S2.1W MULTI-WIDE FOUNDATION PLAN
3/16" = 1'–0"

2A S2.1W FND. AT BLDG. SEP. AT SIDEWALLS
3/16" = 1'–0"

BLDG. SIZE	SIDEWALLS (ONE ℞ AT EA. SIDEWALL FTG.) PLATE TYPE PER A/S5.1W (LOCATE ℞'S AT RESTRAINED FTGS)	ENDWALLS (ONE ℞ EA. CORNER OF EA. MOD.) PLATE TYPE PER A/S5.1W
24x40	MIN. 4 ℞ TYPE 1, 2 OR 3 (ALT. MIN. 5 ℞ TYPE 7)	4, 5 OR 6
36x40	MIN. 5 ℞ TYPE 1, 2 OR 3 (ALT. MIN. 7 ℞ TYPE 7)	1, 2 OR 3
48x40	MIN. 7 ℞ TYPE 1, 2 OR 3 (ALT. MIN. 9 ℞ TYPE 7)	1, 2 OR 3

SEE A S5.1W, F S5.1W, G S5.1W & J S5.1W FOR PLATE SIZE AND INSTALLATION

A S2.1W NAIL PLATE SCHEDULE

NOTE: FOR 60'x40' AND 72'x40' BUILDINGS CONCRETE FOUNDATION REQUIRED

BLDG. SIZE	STRAP	ATTACHMENT EA. END OF STRAP
24x40 36x40 48x40	WB106x18" (PLATE 16 GA. x 1 1/4")	7–10dx1 3/4" (ALT. 5–ø10 x 1 1/2" WOOD SCREWS)

SEE D S5.1W

B S2.1W ENDWALL TIE STRAP SCHEDULE
(TYPICAL AT MODULE CENTERLINE)

REVISIONS

PC

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
02 101487
AC ___ FLS ___ SS ___
DATE 11/2/99

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER
TERRY LYNN VERDUGO
No. 044581
Exp. 03/31/02
C/CIVIL
STATE OF CALIFORNIA

ARCHITECT

LICENSED ARCHITECT
CHARLES W. CHAPMAN HILL
C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

LICENSED ARCHITECT
MITCHELLA. McALLISTER
NO. C-17250
REN. 2/28/17
STATE OF CALIFORNIA

36-53
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC ___ FLS ___ SS ___
DATE 4-7-2016

DESIGN
ROOF LIVE LOAD = 20/30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WIND = 80 MPH exp C
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE ≥15KM

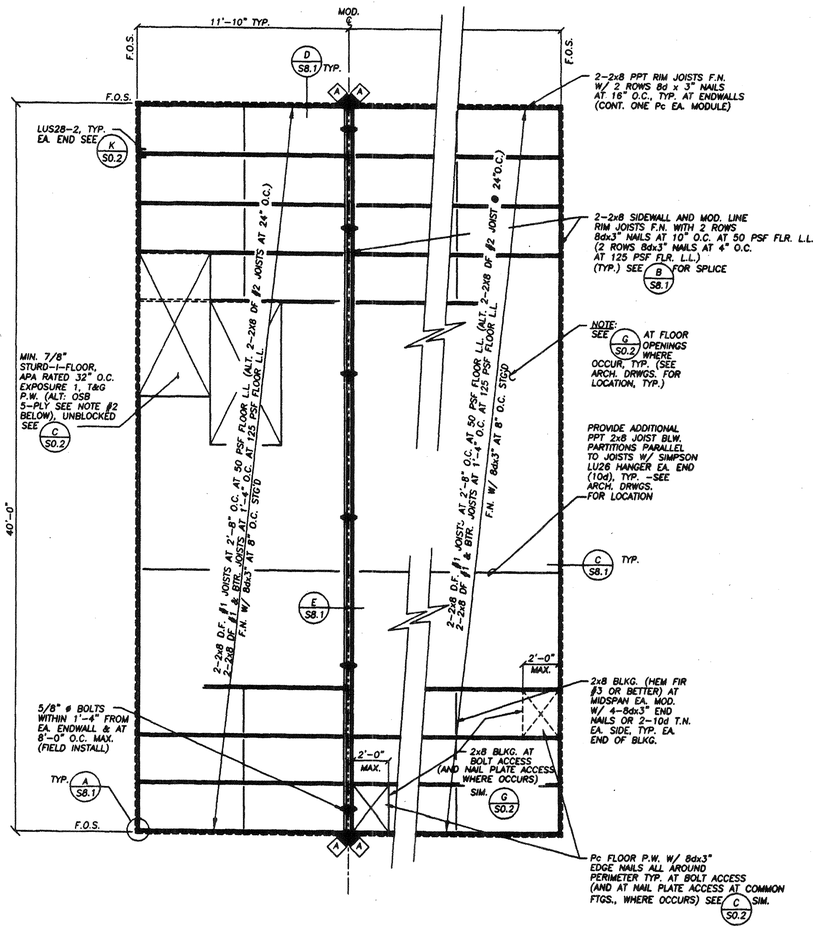
GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9231

24'x40', 36'x40', 48'x40'
RELOCATABLE BUILDINGS

WOOD PAD FOUNDATION PLANS

DRAWN TDL/CLP
CHECKED TLV
DATE 07/15/99
SCALE 3/16"=1'-0"
JOB NO.
FILE P269S21W

S2.1W

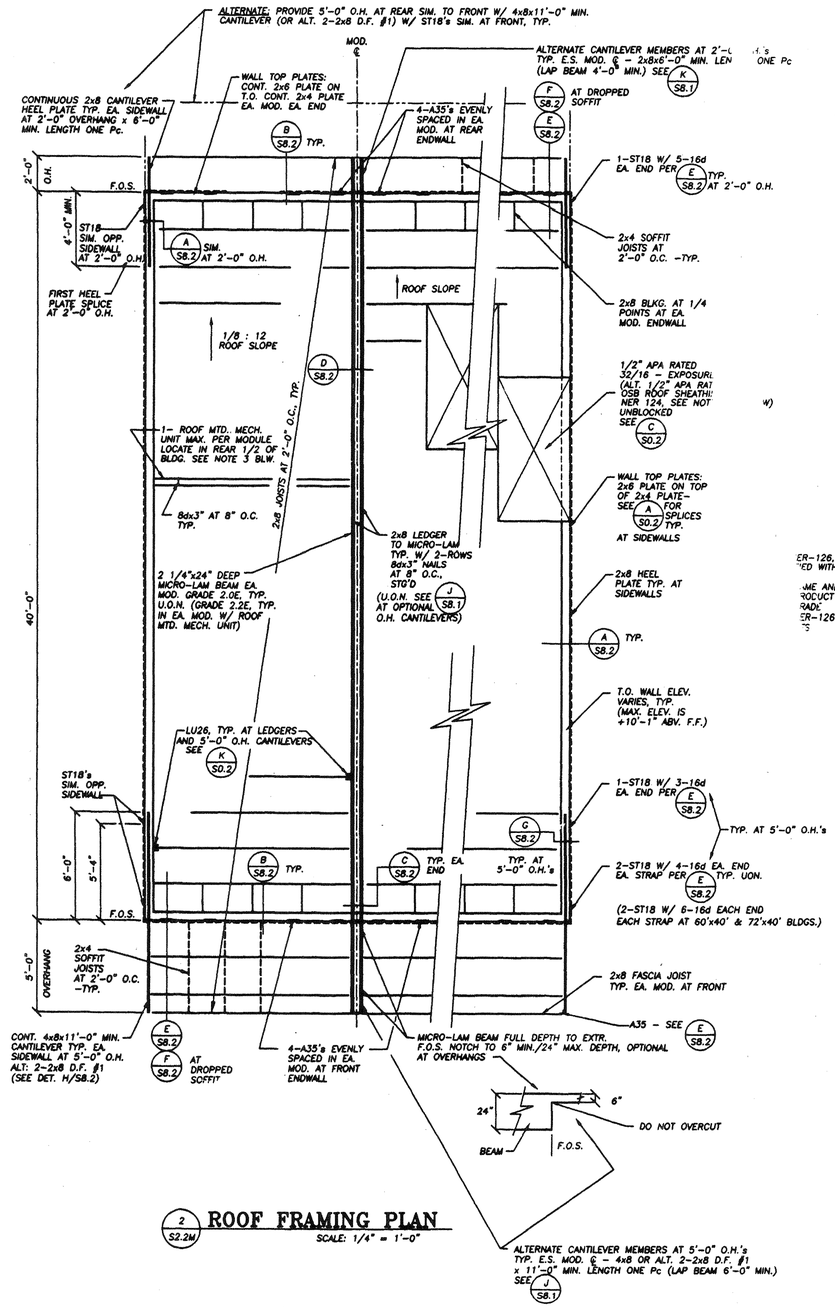


REAR

FRONT

1 S2.2M FLOOR FRAMING PLAN

SCALE: 1/4" = 1'-0"



2 S2.2M ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

ER-126, MICRO-LAM BEAMS SHALL BE
ED WITH STAMPS NOTING:
ME AND PLANT NUMBERS OF MFR.
RODUCT TRADE NAME
RADE
ER-126

NOTE:

1. SEE 1 S9.1R OR 2 S9.1R AND SHEET S9.2R FOR ACCESS RAMP/LANDING/STAIR (TYP.) SEE ARCH. DRWGS FOR LOCATION, TYPE, AND CONFIGURATION, TYP.
2. ALT. FLR. SHTHG. SHALL BE MIN. 7/8" STURD-I-FLOOR APA RATED 32" O.C., EXPOSURE 1, T&G PS-1 VENEER FACED STRUCTURAL USE PANELS W/ NON VENEER OR VENEER CORE AS MANUFACTURED BY OREGON STRAND BOARD COMPANY OR APPROVED EQUAL. PANEL SHALL BE MARKED WITH AN APA GRADE MARK, WITH A SPAN IDENTIFICATION INDEX IN ACCORDANCE WITH APA. SEE COUNCIL OF AMERICAN BUILDING OFFICIALS REPORT NER 108.
3. WHERE ROOF MOUNTED MECH. UNIT OCCURS, PROVIDE 2-2x8 ROOF JOISTS AT 24" O.C. BELOW UNIT WITH LUS28-2 JOIST HANGER EACH END, SEE K S0.2 (LOCATE CENTER OF GRAVITY OF 1- 500# MAX. OPERATING WEIGHT MECH. UNIT AT CENTER OF MODULE IN REAR 1/2 OF BUILDING). PROVIDE 4x4 BLKG. BELOW MECH. UNIT SUPPORT FRAME / CURB WITH A34 EACH END, TYP. SEE J S8.2 AND K S8.2 FOR FRAMING AT MECH. OPENINGS IN ROOF WHERE OCCUR.
4. ALT. ROOF SHTHG. SHALL BE 1/2" APA RATED 32/16 ORIENTED STRAND BOARD (OSB) ROOF SHEATHING AS MANUFACTURED BY LOUISIANA - PACIFIC CORPORATION. PANEL SHALL BE MARKED WITH AN APA GRADE MARK, WITH A SPAN IDENTIFICATION INDEX IN ACCORDANCE WITH APA. MANUFACTURE AND INSTALL PER DSA PRODUCT ACCEPTANCE NUMBER PA-062.

LEGEND (TYP. THIS SHEET)

: 2x4 STUD WALL SEE A S0.2, TYP.

: INDICATES HOLDOWN STRAP(s) PER H S8.1 TYP. AT MOD. CENTERLINES

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT 02 115037 AC FLS SS DATE 4-7-2016

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT 02 105033 AC FLS SS DATE 4-1-03

DESIGN

ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WIND = 80 MPH = C
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE ≥15KM

REVISIONS

PC

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES 02 101487 AC FLS DATE 11/8/02

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER TERRY LYNN VOSS NO. 044581 Exp. 03/31/02 CIVIL STATE OF CALIFORNIA

ARCHITECT

LICENSED ARCHITECT [redacted] NO. C-19,752 EXP. 07/31/01 STATE OF CALIFORNIA

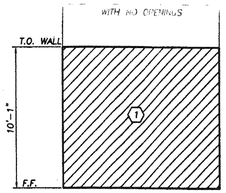
LICENSED ARCHITECT MICHAEL A. McALLISTER NO. C17260 REN. 2/28/17 STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

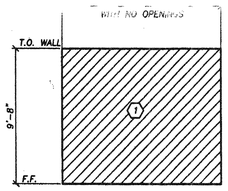
24'x40', 36'x40', 48'x40', 60'x40', 72'x40'
RELOCATABLE BUILDINGS
SACRAMENTO CITY U.S.D.
MARSHALL INTERMEDIATE
MULTI-WIDE FLOOR AND ROOF FRAMING PLANS

DRAWN TDL/LLP
CHECKED TLV
DATE 07/15/99
SCALE 1/4"=1'-0"
JOB NO. 03173
FILE P269S22M

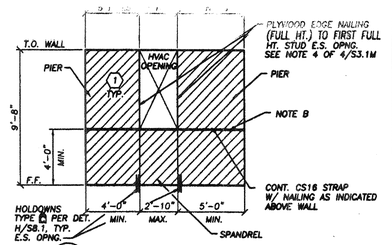
S2.2M



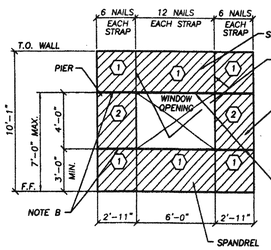
1A / S3.1M MOD. WITH NO OPENINGS



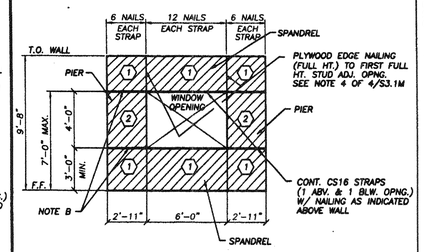
2A / S3.1M MOD. WITH NO OPENINGS



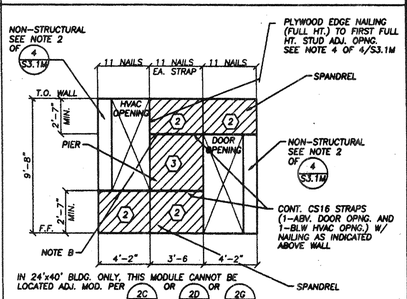
2F / S3.1M MOD. WITH HVAC OPENING (AS SHOWN OR OPPOSITE HAND)



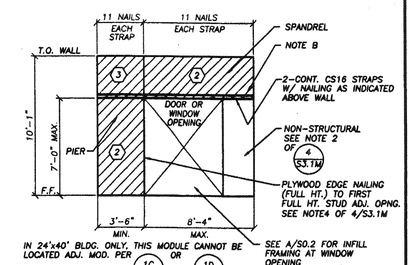
1B / S3.1M MOD. WITH 6'-0" WINDOW OPENING



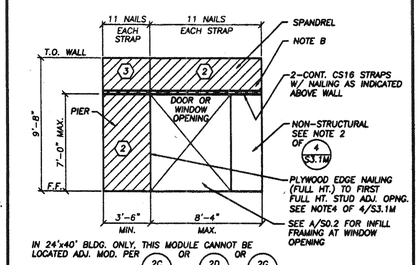
2B / S3.1M MOD. WITH 6'-0" WINDOW OPENING



2G / S3.1M MOD. WITH DOOR & HVAC OPENINGS



1C / S3.1M MOD. WITH 6'-0" FULL HEIGHT OPENING (AS SHOWN OR OPPOSITE HAND)



2C / S3.1M MOD. WITH 6'-0" FULL HEIGHT OPENING (AS SHOWN OR OPPOSITE HAND)

GENERAL NOTES

A. SEE 4/S3.1M FOR SHEARWALL TYPES.

B. PROVIDE 4x BLOCKING ADJ. CORNERS OF OPENINGS SIM. J S0.2 WHERE NOTED FOR FULL LENGTH OF CS16 STRAP (EXCEPT WHERE HEADER OR 2x SILLS OCCUR).
PROVIDE 1 1/4" x 16 GAUGE CONT. PLATE STRAP, ASTM A446 GRADE A (Fy=33 KSI MIN.) (SIMPSON CS16 OR EQUAL) FOR FULL LENGTH OF MODULE END WALL OR AS INDICATED ON SIDEWALL (OVER BLKG. OR HEADER/SILL PLATE.)
- NAIL CS16 TO BLKG. E.S. OF OPENING W/ 8dx2 1/2" NAILS AT EQUAL SPACES. SEE ELEVATIONS FOR NUMBER OF NAILS.
- NAIL CS16 TO HEADER OR UPPER SILL PLATE W/ 8dx2 1/2" NAILS AT EQUAL SPACES. SEE ELEVATIONS FOR NUMBER OF NAILS.
PROVIDE P.W. EDGE NAILS TO BLKG W/ CS16 STRAP –TYP.

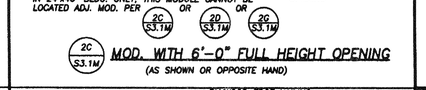
C. SEE FLOOR PLAN, SHEET A2, FOR SHEARWALL LAYOUT.

D. ALTERNATES SHOWN ARE INTERCHANGEABLE AND ANY MODULES MAY BE LOCATED ADJ. TO EACH OTHER, UNLESS SPECIFICALLY NOTED OTHERWISE (AT LEAST ONE DOOR SHALL BE LOCATED IN FRONT ENDWALL)

E. SEE A/S0.2 FOR INFILL FRAMING WHERE OCCURS.

F. CS16 STRAPS MAY BE SPLICED AT CENTERLINE OF HEADERS AT SIDEWALLS ONLY. PROVIDE 1/2 REQUIRED NAILS TO EACH STRAP (EACH SIDE OF SPLICE)

1D / S3.1M MOD. WITH 8'-0" WINDOW OPENING (AS SHOWN OR OPPOSITE HAND)

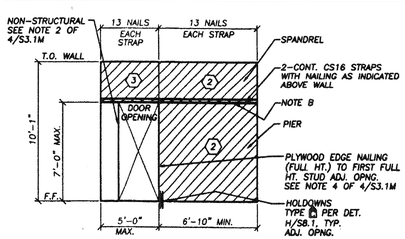


2D / S3.1M MOD. WITH 8'-0" WINDOW OPENING (AS SHOWN OR OPPOSITE HAND)

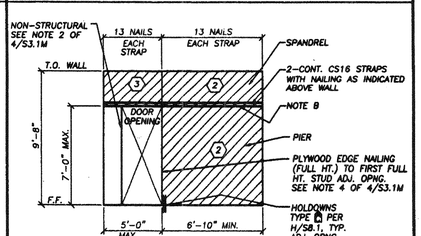
SW TYPE	PLYWOOD	PLYWOOD EDGE NAIL SPACING
1	5/8" MAX. – 1/2" MIN. GROOVED EXTERIOR TYPE SIDING PLYWOOD APA RATED 16" O.C. (STUD SPACING) PER PS–1 (5/16" MIN. NET PLYWOOD THICKNESS AT GROOVES)	6" O.C.
2		4" O.C. (NOTE 5)
3		3" O.C.

NOTES:
1. WALL PLYWOOD NAILS SHALL BE 8d x 2 1/4" MIN. COMMON NAILS
2. PLYWOOD AT ALL EXTERIOR NON–SHEARWALL LOCATIONS SHALL BE SIM. SHEARWALL TYPE 1
3. SEE B S0.2, H S0.2 & J S0.2 TYP.
   BLOCKING & STUDS RECEIVING EDGE NAILING FROM SHEARWALL TYPE 3 SHALL BE 3x OR GREATER.
4. EDGE NAILING NOTED APPLIES WITHIN AREA INDICATED AND AT 4 BOUNDARIES OF THE AREA. BOUNDARIES COMMON TO TWO AREAS SHALL HAVE TWO ROWS EDGE NAILS (ONE FOR EACH AREA) TO COMMON MEMBER (BLKG. / FULL HEIGHT STUD/ ETC.)
5. SW TYPE 2 USED FOR ALLOWABLE SHEAR ≤ 350 PLF.

4 / S3.1M SHEARWALL SCHEDULE



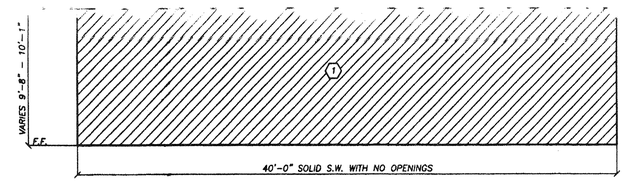
1E / S3.1M MOD. WITH DOOR OPENING (AS SHOWN OR OPPOSITE HAND)



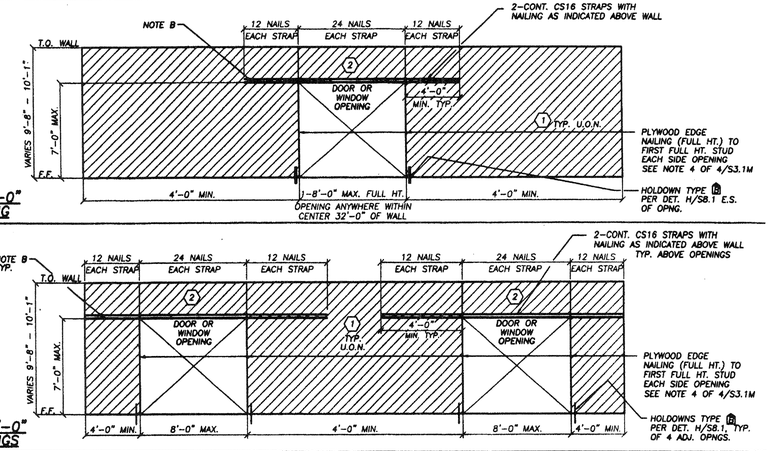
2E / S3.1M MOD. WITH DOOR OPENING (AS SHOWN OR OPPOSITE HAND)

1 / S3.1M SHEARWALL ELEVATIONS AT FRONT ENDWALL

2 / S3.1M SHEARWALL ELEVATIONS AT REAR ENDWALL

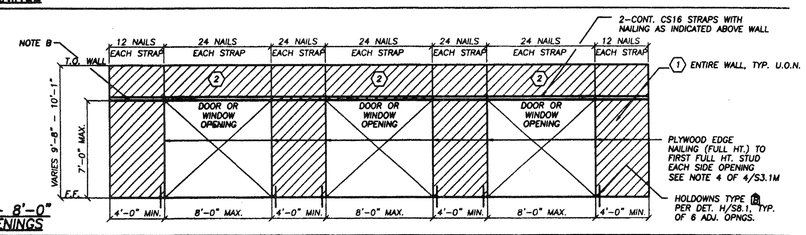


3A / S3.1M SIDEWALL WITH NO OPENINGS

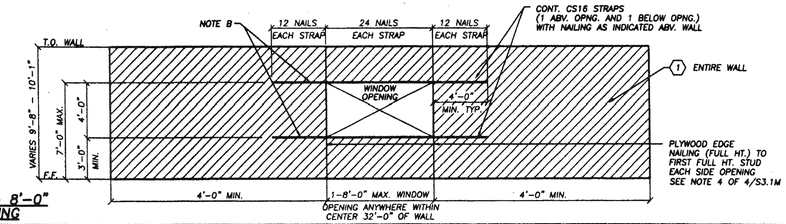


3B / S3.1M SIDEWALL WITH 1– 8'-0" FULL HEIGHT OPENING

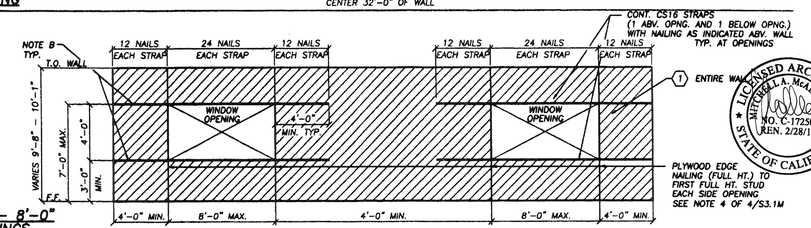
3C / S3.1M SIDEWALL WITH 2– 8'-0" FULL HEIGHT OPENINGS



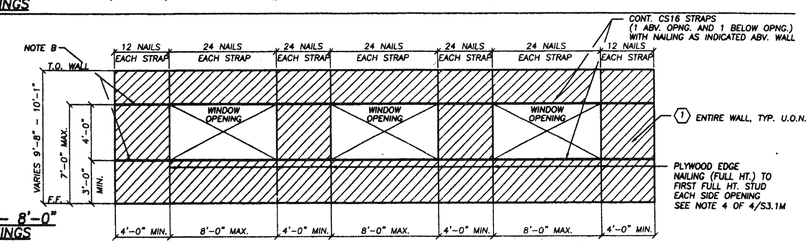
3D / S3.1M SIDEWALL WITH 3– 8'-0" FULL HEIGHT OPENINGS



3E / S3.1M SIDEWALL WITH 1– 8'-0" WINDOW OPENING



3F / S3.1M SIDEWALL WITH 2– 8'-0" WINDOW OPENINGS



3G / S3.1M SIDEWALL WITH 3– 8'-0" WINDOW OPENINGS

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
02 115037
AC ___ FLS ___ SS 135C
DATE 4-7-2016

3 / S3.1M SHEARWALL ELEVATIONS AT SIDEWALLS

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
02 105033
AC ___ FLS ___ SS 135C
DATE 4-7-03

DESIGN

ROOF LIVE LOAD =	30	PSF (SNOW)
FLOOR LIVE LOAD =	50/125	PSF
WIND =	80	MPH = C
SEISMIC ZONE =	4	
SEISMIC SOURCE TYPE =	A	
DISTANCE TO KNOWN SOURCE	≥15KM	

PC

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
02 101487
AC ___ FLS ___ SS 135C
DATE 11/8/99

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER TERRY LYNN VERNER No. 044581 Exp. 03/31/02 CIVIL STATE OF CALIFORNIA

ARCHITECT

LICENSED ARCHITECT MICHAEL A. McALLISTER C-19,752 EXP. 07/31/01 STATE OF CALIFORNIA

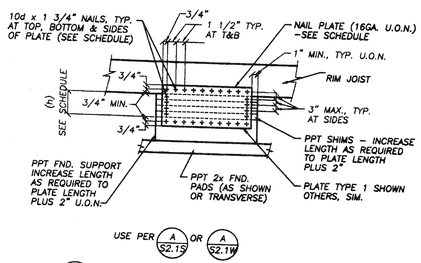
GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 537, LOOMIS, CA 95650 (916) 652-9291

~~24'x40', 36'x40', 48'x40'~~
RELOCATABLE BUILDINGS
~~FACILITIES~~ CITY HALL
HOLLY ~~UNIFORM~~ ELEMENTARY
MULTI-WIDE SHEARWALL ELEVATIONS

DRAWN	CLP/TDL
CHECKED	TLV
DATE	07/15/99
SCALE	3/16"=1'-0"
JOB NO.	0613
FILE	P269S31M

S3.1M

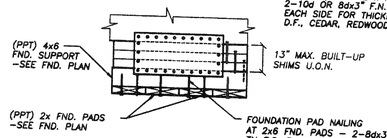
PLATE TYPE	HEIGHT	LENGTH	NO. OF NAILS AT T&B	NOTES
1	7"	15"	10	SHIM "h" : 0" TO 4" MAX.
2	12"	18"	12	SHIM "h" : 4" TO 9" MAX.
3	17"	18"	*	SHIM "h" : 9" TO 13" MAX. (14 GA. PLATE) * SEE F/S5.1W
4	7"	22 1/2"	15	SHIM "h" : 0" TO 4" MAX.
5	12"	27"	18	SHIM "h" : 4" TO 9" MAX.
6	17"	24"	**	SHIM "h" : 9" TO 13" MAX. (14 GA. PLATE) ** SEE G/S5.1W
7	7"	12"	8	SHIM "h" : 0" TO 4" MAX.



A/S5.1W DET. -TYP. NAIL PLATE

SCALE: 1" = 1'-0"

(U.O.N. - SEE F/S5.1W & G/S5.1W FOR PLATES TYPE 3 & TYPE 6)

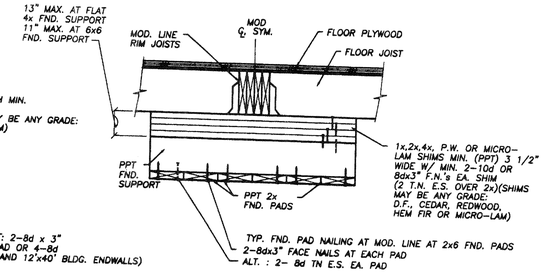


NOTE:
1x, 2x, 4x, P.W. OR MICRO-LAM SHIMS (PPT) MIN. 3 1/2" WIDE x MIN. 18" LONG U.O.N. WITH MIN. 2-10d OR 8dx3" F.N.'S EACH SHIM (2 T.N. EACH SIDE FOR THICKNESS OVER 2x)(SHIMS MAY BE ANY GRADE: D.F., CEDAR, REDWOOD, HEM FIR, OR MICRO-LAM)

FOUNDATION PAD NAILING AT 2x6 FND. PADS - 2-8dx3" F.N. TO EA. PAD OR ALT: 2-8d x 3" TN E.S. EA. PAD. TYP. U.O.N. (MIN. 4-8dx3" F.N. EA. PAD OR 4-8d TN E.S. EA. PAD AT 60" AND 72"x40" BLDG. SIDEWALLS AND 12"x40" BLDG. ENDWALLS)

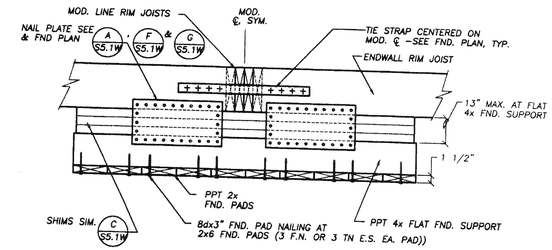
B/S5.1W FOUNDATION PADS AT SIDEWALLS

SCALE: 1" = 1'-0"



C/S5.1W DET. - FND AT MOD. LINE

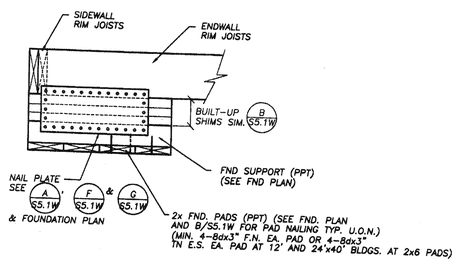
SCALE: 1" = 1'-0"



D/S5.1W DET. -FND AT ENDWALL & MOD. LINE

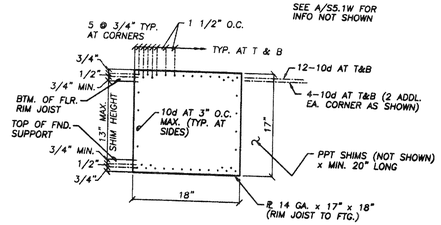
SCALE: 1" = 1'-0"

SEE DETAIL K/S5.1W FOR ALTERNATE SHEAR TRANSFER TO FND.



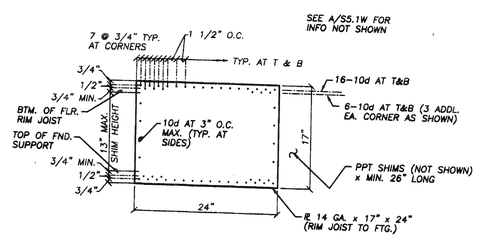
E/S5.1W FOUNDATION AT CORNERS

SCALE: 1" = 1'-0"



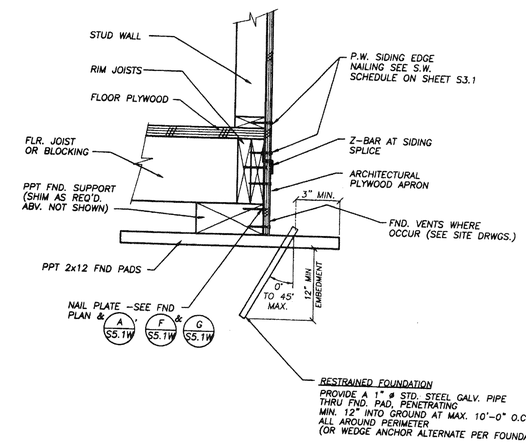
F/S5.1W NAIL PLATE TYPE 3

FOR SHIM THICKNESSES BETWEEN 9" AND 13" MAX.



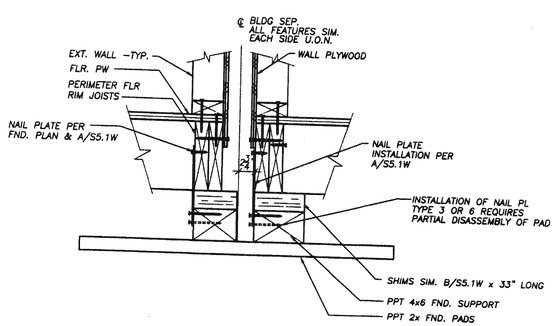
G/S5.1W NAIL PLATE TYPE 6

FOR SHIM THICKNESSES BETWEEN 9" AND 13" MAX.



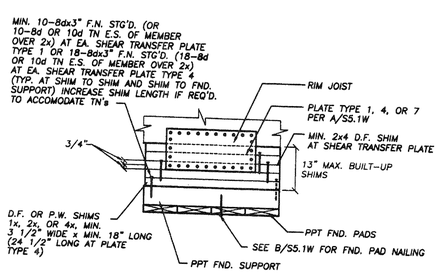
H/S5.1W DET. -TYP. RESTRAINED FOUNDATION (SIDEWALL SHOWN ENDWALL SIM.)

SCALE: 1" = 1'-0"

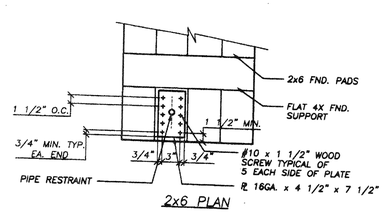


J/S5.1W BLDG SEPARATION DETAIL

TYPICAL NAIL PLATE INSTALLATION

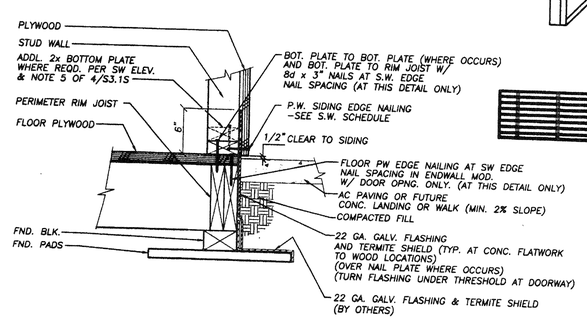


K/S5.1W DET. - ALT. SHEAR TRANSFER TO FND.



2x6 PLAN

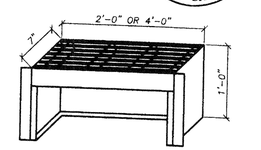
L/S5.1W DET. - TYP. REPAIR FOR SPLIT PADS AT RESTRAINED FND.



M/S5.1W DET.- TYPICAL FLASHING

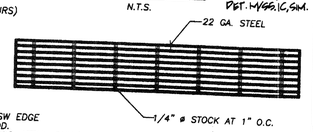
SCALE: 1 1/2" = 1'-0"

(WHERE CONC. OCCURS ADJ. TO WOOD FRAMING -SEE SITE DRWGS. FOR LOCATION)



VENT BOX DETAIL
N.T.S.

INSTALL PER DET. H/S5.1C, SIM.



GRATE DETAIL
N.T.S.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02 115037
AC ___ FLS ___ SS 100
DATE 4-7-2016

DESIGN
ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WIND = 80 MPH ☒ C
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE ≥15KM

REVISIONS

PC

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
02 101487
AC ___ FLS ___
DATE 11/2/99

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER
TERRY LYNN VANDERMEER
No. 044581
Exp. 03/31/02
CIVIL
STATE OF CALIFORNIA

ARCHITECT

LICENSED ARCHITECT
MICHAEL A. McALLISTER
C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

LICENSED ARCHITECT
MICHAEL A. McALLISTER
NO. C-17250
REN. 2/28/17
STATE OF CALIFORNIA

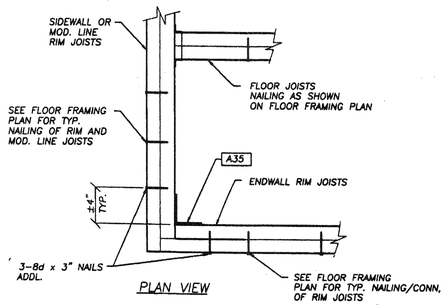
GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

12'x40', 24'x40', 36'x40', 48'x40'
RELOCATABLE BUILDINGS

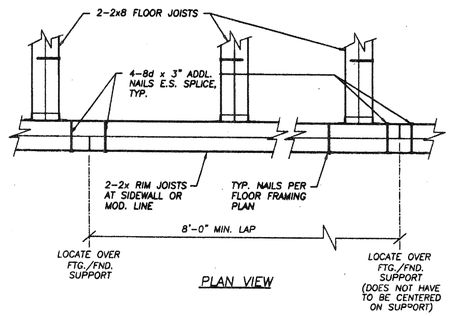
WOOD PAD FOUNDATION DETAILS

DRAWN	CLP/TDL
CHECKED	TLV
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	
FILE	P269S51W

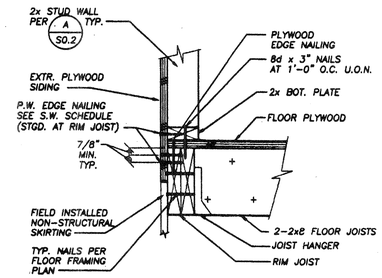
S5.1W



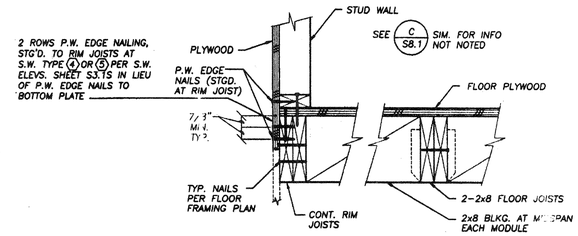
A/S8.1 DET.– FLOOR RIM JOISTS AT CORNER



B/S8.1 (11/15/91) DET.– RIM JOIST SPLICE (SIDEWALL & MOD. LINE)



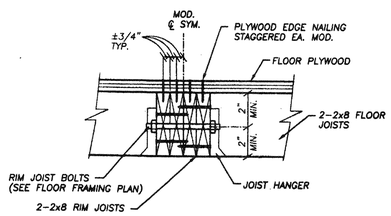
C/S8.1 (11/15/91) DET.– FLOOR FRAMING AT SIDEWALL



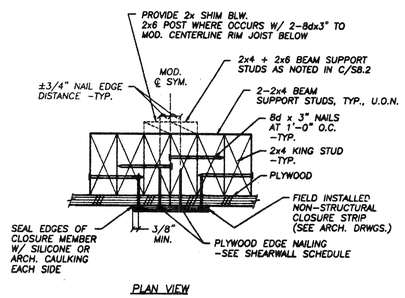
D/S8.1 (11/15/91) DET.– FLOOR FRAMING AT END WALL

TIE STRAP SCHEDULE		
STRAP DESIGNATION	NO. OF STRAPS REQUIRED	NO. OF NAILS REQD. EA. END EA. STRAP
A	1	3
B	1	6
C	2	6

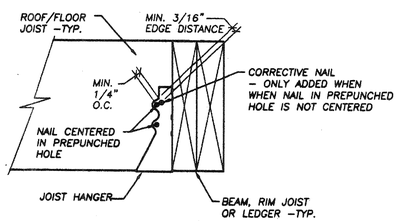
NOTE: SEE FLOOR FRAMING PLAN OR S.W. ELEV.'S FOR STRAP LOCATIONS.



E/S8.1 DET.– FLOOR AT MOD. CENTERLINE

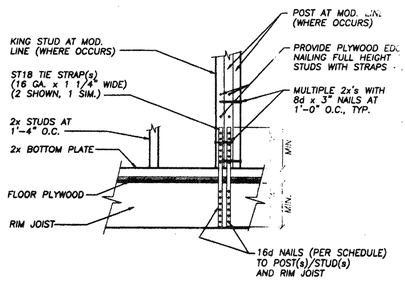


F/S8.1 DET.– TYP. MOD. ℄ CLOSURE

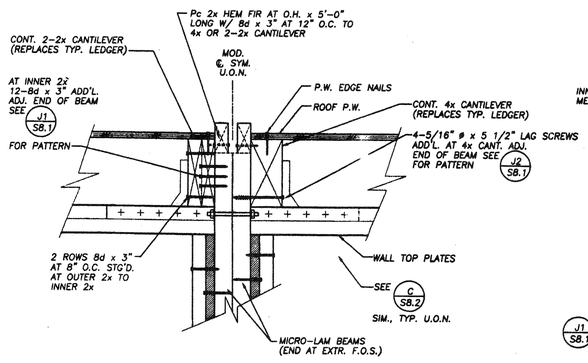


NOTE: CORRECTIVE NAIL IN SUPPORTED MEMBER SHOWN– CORRECTIVE NAIL IN SUPPORTING MEMBER SIM.

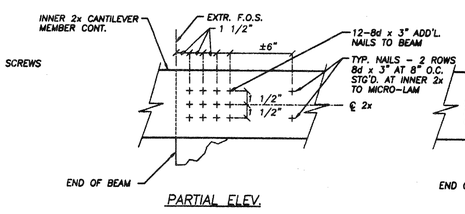
G/S8.1 (11/15/91) DET.– MACHINE NAIL TO JOIST HANGER



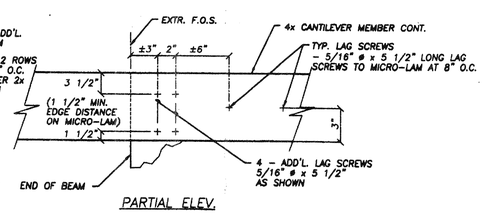
H/S8.1 DET.– HOLDOWN STRAP(s)



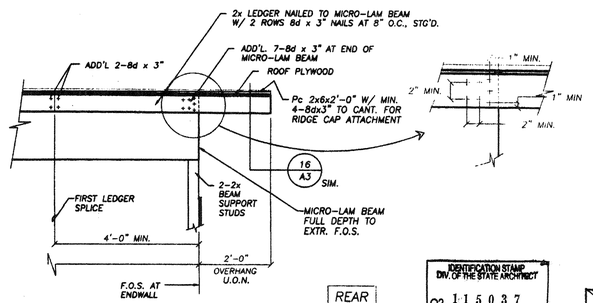
J/S8.1 DET.– ALT. MOD ℄ CANTILEVERS AT 5'-0" O.H.'s AT ROOF



J1/S8.1 ADD'L. 2x CANTILEVER NAILS ADJ. BEAM END



J2/S8.1 ADD'L. 4x CANTILEVER LAG SCREWS ADJ. BEAM END



K/S8.1 DET. – ALT. MOD. ℄ CANTILEVER AT 2'-0" O.H. AT ROOF

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
02 115037
AC ___ FLS ___ SS ___
DATE 4-7-2016

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
02 105038
AC ___ FLS ___ SS ___
DATE 4-7-2016

DESIGN
ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/1000 PSF
WIND = 80 MPH EXP C
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE >15KM

REVISIONS

PC
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
02 101487
AC ___ FLS ___ SS ___
DATE 11/8/99

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER
JESSICA LYNN VERDUGO
No. 044591
Exp. 03/31/02
CIVIL
STATE OF CALIFORNIA

ARCHITECT

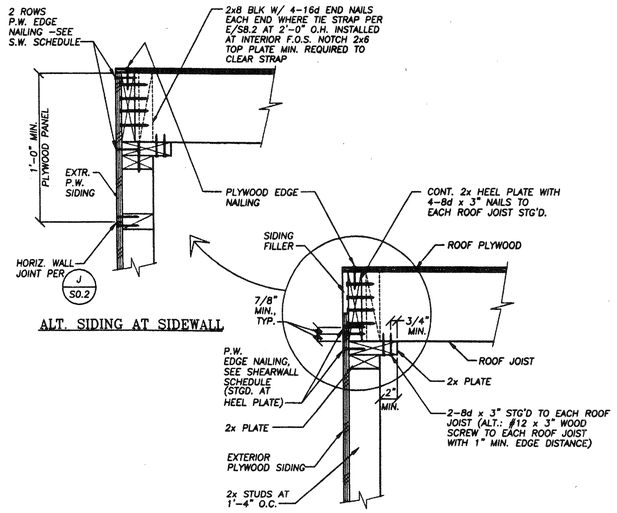
LICENSED ARCHITECT
MICHAEL A. McALLISTER
No. C-19,752
EXP. 07/31/01
STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA. 95650 (916) 652-9291

RELOCATABLE BUILDINGS
12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'
Section 1704 SITE W.D.
Hoisington Anderson ELEVATIONS
FRAMING DETAILS

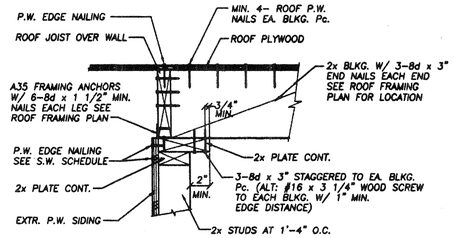
DRAWN: CLP/TDL
CHECKED: TLV
DATE: 07/15/99
SCALE: N.T.S.
JOB NO.: 07313
FILE: P269S81

S8.1



ALT. SIDING AT SIDEWALL

A/S8.2 DET. –ROOF FRAMING AT SIDEWALL



NOTE: INSPECTOR SHALL INSPECT NAILING OF A35's TO PLATE PRIOR TO SETTING ROOF JOIST.

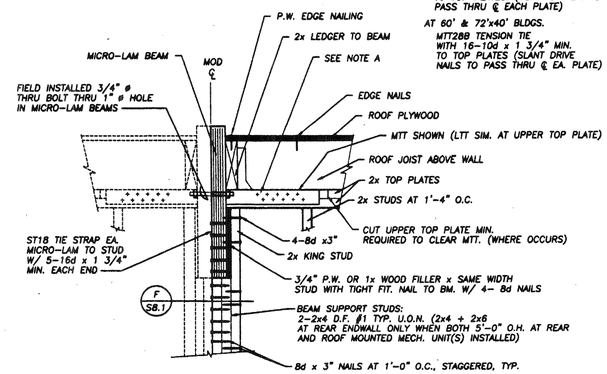
B/S8.2 DET. – ROOF FRAMING AT ENDWALL

NOTE A:

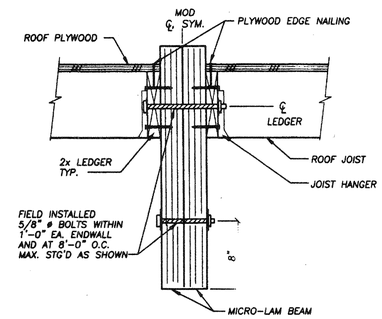
AT 24' & 36'x40' BLDGS.
LTT19 TENSION TIE WITH 4–10dx1 3/4" MIN. TO ℄ UPPER TOP PLATE

AT 48'x40' BLDG.
LTT20B TENSION TIE W/ 8–10d x 1 3/4" MIN. TO TOP PLATES. (SLANT DRIVE NAILS TO PASS THRU ℄ EACH PLATE)

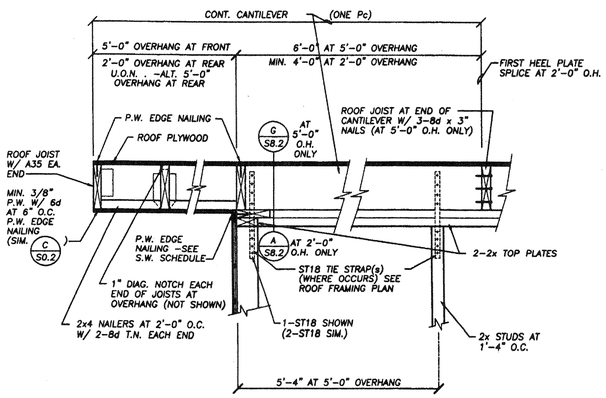
AT 60' & 72'x40' BLDGS.
MTT28B TENSION TIE WITH 16–10d x 1 3/4" MIN. TO TOP PLATES (SLANT DRIVE NAILS TO PASS THRU ℄ EA. PLATE)



C/S8.2 DET. –ROOF AT ENDWALL & MOD. LINE

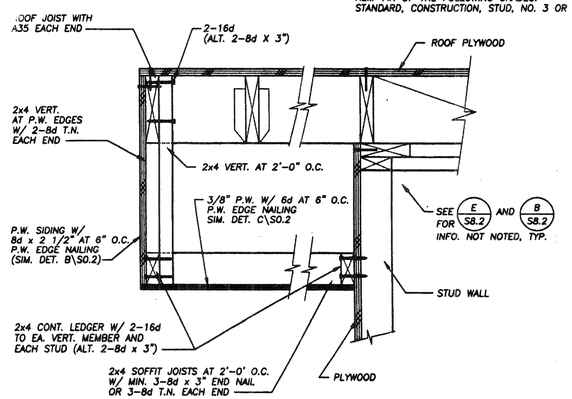


D/S8.2 DET. –ROOF AT MOD. CENTERLINE

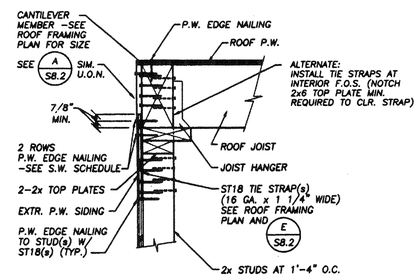


E/S8.2 DET.– ROOF FRAMING AT OVERHANG

NOTE: 2x4 SOFFIT JOISTS, LEDGERS AND VERTICAL MEMBERS MAY BE HEM–FIR OF THE FOLLOWING GRADES: STANDARD, CONSTRUCTION, STUD, NO. 3 OR BETTER

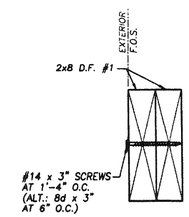


F/S8.2 DET.– DROPPED SOFFIT FRAMING AT OVERHANG

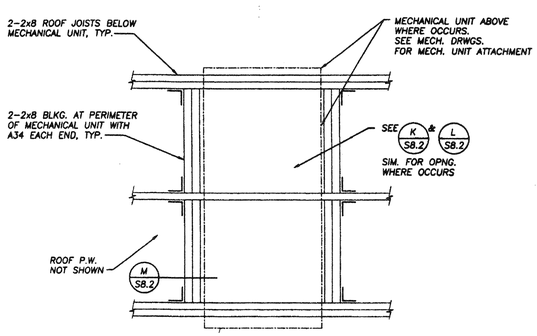


G/S8.2 DET.– ROOF FRAMING AT FRONT CANTILEVER AT SIDEWALL

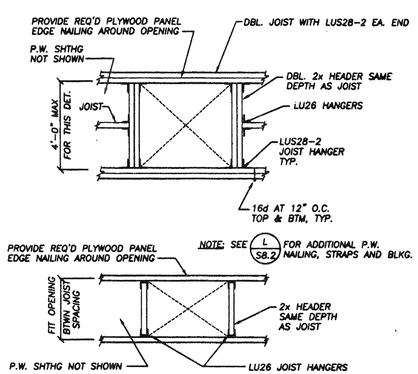
SIM. AT ALT. 5'–0" O.H. AT REAR



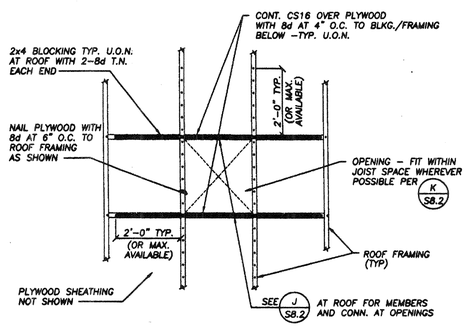
H/S8.2 DET.– ALT. CANTILEVER MEMBER AT 5'–0" O.H.



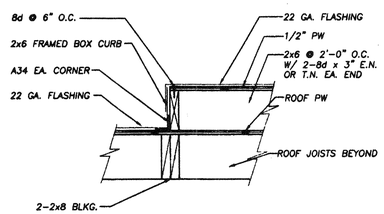
J/S8.2 PLAN DET. – BLKG. AT MECH. UNIT



K/S8.2 DET. TYP. FRAMING AT OPNGS



L/S8.2 DET.– TYP. ROOF OPENING



M/S8.2 DET – MECHANICAL UNIT CURB

LICENSED ARCHITECT MITCHELL A. MCALLISTER NO. C-17250 REN. 2/28/17 STATE OF CALIFORNIA

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT 02 115037 AC ___ FLS ___ SS ___ DATE 4-7-2016

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT 02 105083 AC ___ FLS ___ SS ___ DATE ___

DESIGN

ROOF LIVE LOAD = 30 PSF (SNOW)
FLOOR LIVE LOAD = 50/125 PSF
WIND = 80 MPH ☒ C
SEISMIC ZONE = 4
SEISMIC SOURCE TYPE A
DISTANCE TO KNOWN SOURCE ≥15KM

REVISIONS

PC

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
02 101487
AC ___ FLS ___ SS ___
DATE 11/8/99

DIVISION OF STATE ARCHITECT

ENGINEER

REGISTERED PROFESSIONAL ENGINEER TERESA LYNN VERNER No. 044581 Exp. 03/31/02 CIVIL STATE OF CALIFORNIA

ARCHITECT

LICENSED ARCHITECT ISRAEL [redacted] C-19,752 EXP. 07/31/01 STATE OF CALIFORNIA

GARY DOUPNIK MANUFACTURING, INC.
3237 RIPPEY ROAD, P.O. BOX 527, LOOMIS, CA 95650 (916) 652-9291

RELOCATABLE BUILDINGS
12'x40', 24'x40', 36'x40', 48'x40', 60'x40', 72'x40'
CARPENTERIA CITY U.S.D.
MARIN JR. HIGH SCHOOL BLOOMFIELD
FRAMING DETAILS

DRAWN	CLP/TDL
CHECKED	TLV
DATE	07/15/99
SCALE	N.T.S.
JOB NO.	0083
FILE	P269S82

S8.2

EXHIBIT C – Escrow Agreement

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between_____ _____ whose address is_____ _____ hereinafter called ”Owner,” _____ 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 the Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within 10 days of the 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 _____, and shall designate the Contractor as the beneficial owner.

(2) **Option 1:** The Owner shall make progress payments to the Contractor for those 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) **Option 2:** When the Owner makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time that 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. The Owner’s expense are $100 administrative fee charged per draw (for Option 2 only; see paragraph (11).

(5) The interest earned on the securities or the money market account 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 days’ written notice to the Escrow Agent from the owner of the default, 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 payments 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:

(11) OPTIONS FOR ESCROW PAYMENTS:
Option No. 1:_____ Total Amount of Retention
Option No. 2:_____ Owner to make payment based on amount of retention

On behalf of Owner:	On behalf of Contractor:
_____	_____
Title	Title
_____	_____
Name	Name
_____	_____
Signature	Signature
_____	_____
Address	Address

On behalf of Escrow 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 first set forth above.

On behalf of Owner:	On behalf of Contractor:
_____	_____
Title	Title
_____	_____
Name	Name
_____	_____
Signature	Signature

EXHIBIT D – DSA 103-1
Structural Test and Inspection Requirements

TO BE ADDED VIA AMENDMENT

EXHIBIT E – Hazardous Materials Manual

NOT USED

EXHIBIT F – Construction Forms Manual

Attached Separately (Book 2 of 2)

EXHIBIT G – Project Labor Agreement

PROJECT LABOR AGREEMENT

for the

SACRAMENTO CITY UNIFIED SCHOOL DISTRICT

PREAMBLE

This Project Labor Agreement ("Agreement") is entered into by and between the Sacramento City Unified School District ("District"), together with contractors and/or subcontractors, who shall become signatory to this Agreement by signing the "Agreement To Be Bound" (Attachment A), and the Sacramento-Sierra Building & Construction Trades Council ("Council") and the local Unions that have executed this Agreement.

RECITALS

WHEREAS, the purpose of this Agreement is to promote efficiency of construction operations during the construction of the District's projects subject to this Agreement, through the use of skilled labor resulting in quality construction outcomes, and to provide for the peaceful settlement of labor disputes and grievances without work disruptions or delays, thereby promoting the District's interest and the public's interest in assuring the timely and cost-effective completion of the District's construction projects; and

WHEREAS, the purpose of this Agreement is to also mutually acknowledge and support the District's Core Value statement and Equity, Access, and Social Justice Guiding Principle; and

WHEREAS, the District's Core Value statement states, *we recognize that our system is inequitable by design and we vigilantly work to confront and interrupt inequities that exist to level the playing field and provide opportunities for everyone to learn, grow, and reach their greatness*; and

WHEREAS, the District's Equity, Access, and Social Justice Guiding Principle ("Guiding Principle") states that *all students are given an equal opportunity to graduate with the greatest number of postsecondary choices from the widest array of options*; and

WHEREAS, the District places high priority upon comprehensive educational programs, training, work-based learning, and workforce development programs for District students and staff in order to best achieve the District's Guiding Principle and to provide meaningful and sustainable careers in the building and construction industry; and

WHEREAS, the successful and efficient completion of the District's construction projects is of the utmost importance to the District and its educational programs and mission; and

WHEREAS, large numbers of workers of various skills will be required in the performance of the construction work, including those to be represented by the Unions affiliated with the Council; and

WHEREAS, the use of skilled labor on construction work increases the safety of construction projects as well as the quality of completed work; and

WHEREAS, the Council and Unions commit to use of skilled and trained workforce requirements described in sections 17250.25 and 17407.5 of the Education Code and sections 2600 through 2602 of the Public Contract Code on applicable Projects covered by this Agreement; and

WHEREAS, it is recognized that District construction projects require multiple contractors and bargaining units on the job site at the same time over an extended period of time, and that the potential for work disruption is substantial in the absence of a binding commitment to maintain continuity of work; and

WHEREAS, the Employers and the Unions desire to mutually establish and stabilize wages, hours and working conditions for the workers employed on the construction projects subject to this Agreement in order to promote a satisfactory, continuous and harmonious relationship among the parties to this Agreement; and

WHEREAS, the District desires to provide construction training and employment opportunities for students of and residents within the District through local hire, apprentice and pre-apprentice programs; and

WHEREAS, the parties signatory to this Agreement pledge their full good faith and trust to work towards mutually satisfactory and successful completion of all District construction projects subject to the Agreement; and

WHEREAS, the Sacramento City Unified School District has previously adopted Resolution No. 2774 regarding the use of Project Labor Agreements on District projects.

NOW, THEREFORE, the parties, in consideration of the mutual promises and covenants herein contained, do mutually agree as follows:

ARTICLE 1

DEFINITIONS

1.1 "Agreement" means this Project Labor Agreement.

1.2 "Agreement to be Bound" means the agreement (attached hereto and incorporated herein as Attachment A) required to be executed by any Employer(s) working on the Project as a precondition to performing Covered Work on the Project.

1.3 "Council" means the Sacramento-Sierra Building and Construction Trades Council, which is the local jurisdictional division of the State Building and Construction Trades Council of California, with affiliated trades unions within its geographical jurisdiction of Sacramento, Yolo, Placer, El Dorado, Amador, Nevada, and Sierra Counties.

1.4 "Completion" means the point at which there is Final Acceptance by the District of a Construction Contract. For purposes of this definition of "Completion," "Final Acceptance" shall mean that point in time at which the District has determined upon final inspection that the work on a Construction Contract has been completed in all respects and all required contract documents, including repairs, warranty work, modifications or punch list work as required under a Construction Contract or when a Contractor performs work under a change order for a Construction Contract, contract drawings, warranties, certificates, manuals and data have been submitted and training completed in accordance with the contract documents and the District has executed a written acceptance of the work.

1.5 "Construction Contract" means, except as to section 2.5 (exclusions from Covered Work) public works or improvement contracts approved by the District, including design-bid, design-build, lease-leaseback, or other contracts under which construction work is performed, that are necessary to complete the Project.

1.6 "District" means the Sacramento Unified School District and the administrative employees under its Superintendent, including any in house Project Manager designated by the District for the Project.

1.7 "Contractor(s)" means any person, firm, corporation, or other entity, or any combination thereof, including joint ventures, and any of its contractors or subcontractors of any tier, or any successor or assigns of such persons or entities, that has entered into a contract with the District, or with any other person or entity contracting for work on the Project on behalf of the District (whether by design-bid, design-build, lease-leaseback or other means), with respect to the construction of any part of the Project under contract terms and conditions approved by the District.

1.8 "Local Area" shall be defined as the area within the boundaries of the District, the City of Sacramento, Sacramento County, and the nine counties in section 1.8.4. Residents of the Local Area shall be first referred for the Project, including journey-level workers and apprentices covered by this Agreement, in the following order of priority:

1.8.1 Priority 1: Residents residing within the boundaries of the District.

1.8.2 Priority 2: Residents of the City of Sacramento.

1.8.3 Priority 3: Residents of Sacramento County.

1.8.4 Priority 4: Residents of the Counties of Yolo, Placer, El Dorado, Amador, Sutter, Yuba, Nevada, Sierra, and San Joaquin.

1.9 "Master Agreement" means the multi-employer collective bargaining agreement of each of the Unions that covers the geographic area of the Project, copies of which shall be provided to the District upon request.

1.10 "Project" means all District construction projects where either the engineer's estimate of the total cost of the project, or the actual cumulative bid amounts submitted by the contractor(s)

awarded the Construction Contracts for the Project, exceeds five hundred thousand dollars ($500,000). All Construction Contracts required to complete an integrated District construction project shall be considered in determining the threshold value. The District and the Council may mutually agree in writing to add additional projects to the scope of Projects to be covered by this Agreement. The term “Project” applies to each and all projects as defined in this section, whether used in the singular or plural herein. Routine maintenance of District properties is not covered by the scope of this Agreement.

1.11 "Project Manager" means a person, including a District employee, firm or other entity designated by the District to manage, coordinate or administer the construction work on a Project subject to this Agreement.

1.12 "Union" or "Unions" means the Sacramento-Sierra Building and Construction Trades Council and the local Unions that are signatory to this Agreement, acting on their own behalf and on behalf of their respective affiliates and member organizations whose names are subscribed hereto and who have through their officers executed this Agreement. The Council and the local Unions are collectively referred to herein as the "Unions."

ARTICLE 2

SCOPE OF AGREEMENT

2.1 Parties. This Agreement shall apply and is limited to all Contractor(s), the District and the Unions that are signatory to this Agreement.

2.2. Applicability. For purposes of this Agreement, Construction Contracts shall be considered completed as set forth in Section 1.4, including when the District directs a Contractor to engage in repairs, warranty work, modifications or punch list work as required under a Construction Contract or when a Contractor performs work under a change order for a Construction Contract. This Agreement shall govern all Construction Contracts awarded on the District Projects that are subject to this Agreement. Except for exclusions from the Covered Work described in section 2.5, for purposes of this Agreement, a Construction Contract shall be considered completed as described in Section 1.4, except when the District's authorized representative directs a Contractor to engage in repairs, warranty work, modifications, or punch list work as required under a Construction Contract or when a Contractor performs work under a change order for a Construction Contract.

2.3 Covered Work. This Agreement covers, without limitation all on-site preparation, surveying, construction, alteration, demolition, installation, improvement, remediation, retrofit, painting, or repair of buildings, structures and other works and related activities for the Project that is within the craft jurisdiction of one of the Unions and which is directly or indirectly part of the Project, including, without limitation to the following examples, geotechnical and exploratory drilling, temporary HVAC, landscaping and temporary fencing, pipelines (including those in linear corridors built to serve the Project), pumps, pump stations, start-up, and modular furniture installation, On-site work includes work done for the

Project in temporary yards, dedicated sites, or areas adjacent to the Project, and at any on-site or off-site batch plant constructed solely to supply materials to the Project. This scope of work includes all soils and materials testing and inspection where such testing and inspection is a classification covered by an applicable Master Agreement or in which a prevailing wage determination has been published.

2.3.1 This Agreement applies to any start-up, calibration, commissioning, performance testing, repair, maintenance, and operational revisions to systems and/or subsystems for the Project performed after Completion, unless performed by District employees.

2.3.2 This Agreement covers all on-site fabrication work over which the District, Contractor(s)/Employer(s) or subcontractor(s) possess the right of control (including work done for the Project in any temporary yard or area established for the Project). Additionally, this Agreement covers any off-site work, including fabrication necessary for the Project defined herein, that is covered by a current Schedule A Agreement or local addenda to a National Agreement of the applicable Union(s) that is in effect as of the execution date of this Agreement.

2.3.3 It is expressly agreed and understood by the Parties that the District shall have the right to purchase material and equipment from any source and the craftsperson covered under this Agreement will handle and install such material and equipment. There shall be no limitation or restriction upon the choice of material or upon the full use and installation of equipment, machinery, materials, tools or other labor-saving devices other than as set forth herein. The lawful fabrication provisions of the appropriate national or local agreements shall be applicable.

2.3.4 The furnishing of supplies, equipment or materials which are stockpiled for later use shall not be covered by this Agreement. However, construction trucking work, such as the hauling and delivery of ready-mix, asphalt, aggregate, sand, or other fill or similar material which is incorporated into the construction process as well as the off-hauling of debris and excess fill, material and/or mud, shall be covered by the terms and conditions of this Agreement to the fullest extent allowed by prevailing wage law and determinations of the California Department of Industrial Relations. Contractor(s)/Employer(s), including brokers, of persons providing construction trucking work shall provide certified payroll records to the District within ten (10) days of written request or as required by bid specifications.

2.3.5 The on-site installation or application of all items shall be performed by the craft having jurisdiction over such work; provided, however, it is recognized that installation of specialty items which may be furnished by the District or a Contractor shall be performed by construction persons employed under this Agreement who may be directed by other personnel in a supervisory role; provided, however, in limited circumstances requiring special knowledge of the particular item(s), may be performed by construction persons of the manufacturer where necessary to protect a manufacturer's warranty, provided the Contractor/Employer using the manufacturer can demonstrate by an enumeration of specific tasks that the work cannot be performed by craft workers under this Agreement. All work of a specialty nature to

be performed by the employees of an equipment manufacturer necessary to protect the warranty on such equipment shall be identified and discussed at the Preconstruction Conference provided in Article V of this Agreement.

2.3.6 Work covered by this Agreement within the following craft jurisdictions shall be performed under the terms of their National Agreements as follows: the National Agreement of Elevator Constructors, the National Transient Lodge (NTL) Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, and any instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, with the exception that Articles IV, XV and XVI of this Agreement shall apply to such work.

2.4 The following shall be excluded from Covered Work:

2.4.1 Work of non-manual employees, including, but not limited to, superintendents, supervisors above the level of general foreman (except those covered by any applicable Master Agreement), staff engineers, building inspectors, timekeepers, clerks, office workers, including messengers, guards, safety personnel, emergency medical and first aid technicians, and other professional, engineering, administrative, executive and management employees;

2.4.2 Equipment and machinery owned or controlled and operated by the District;

2.4.3 Any work performed on or near or leading to or on to the site of work covered by this Agreement and undertaken by state, county, city or other governmental bodies, or their contractor, or by public utilities or their contractors;

2.4.4 Off-site maintenance of leased equipment and on-site supervision of such work;

2.4.5 Work performed by employees of a manufacturer or vendor on the manufacturer's or vendor's equipment if necessary to satisfy the guarantee or warranty on such equipment and where performance of the work is expressly stated in the manufacturer's or vendor's written warranty or guarantee to be a condition for the warranty or guarantee for such products. For any work performed pursuant to this provision, the Contractor shall provide copies of the written warranty requirement to the District, Project Manager, the Council and the affected local Union prior to the commencement of work by the manufacturer or vendor. This exclusion does not apply to any on site construction work subcontracted by such manufacturer or vendor.

2.4.6 District procurement or use of modular buildings;

2.4.7 Off-site maintenance of leased equipment and on-site supervision of such work;

2.4.8 Laboratory or specialty testing or inspection not covered by an applicable Master Agreement;

2.4.9 Non-construction support services contracted by the District or any Contractor in connection with this Project;

2.4.10 All Maintenance work contracted by the District;

2.4.11 All work by employees of the District.

ARTICLE 3

SUBCONTRACTING

3.1 Each Contractor agrees that it will contract for the assignment, awarding or subcontracting of Covered Work, or authorize another party to assign, award or subcontract Covered Work, only to a person, firm, corporation, or other entity that, at the time the contract is executed, has become a party to this Agreement by executing Attachment A, the Agreement to be Bound.

3.2 Each Contractor agrees that it will contract or subcontract the performance of Covered Work only to a person, firm, corporation, or other entity that is or becomes a party to this Agreement. Any Contractor performing Covered Work on the Project shall, as a condition to working on the Project, perform all work under the terms of this Agreement and the applicable Master Agreement. Before being authorized to perform any Covered Work, Contractors shall become a party to this Agreement by signing Attachment A, the Agreement to be Bound. Every Contractor shall notify the Council in writing within five (5) business days after it has contracted to assign, award, or subcontract Covered Work, or to authorize another party to assign, award or subcontract Covered Work in accordance with Section 3.1 or this Section 3.2 and shall at the same time provide to the Council a copy of the executed Agreement to be Bound. The District shall also provide copies to the Council of all executed Agreements to be Bound that it receives within fifteen (15) days of receipt.

3.3 Contractors and all subcontractors of whatever tier who have been awarded contracts for work covered by this Agreement commit to comply with the skilled and trained workforce requirements provided in California Education Code sections 17250.25 and 17407.5 and California Public Contract Code sections 2600 et seq. on applicable Projects.

3.4 Nothing in this Agreement shall in any manner whatsoever limit the rights of the District or any Contractor to subcontract Covered Work or to select its contractors or subcontractors; provided, however, that all Contractors, at all tiers, assigning, awarding, contracting, or performing Covered Work, or authorizing another to assign, award, contract or perform Covered Work, shall be required to comply with the provisions of this Agreement. Each Contractor shall notify each of its contractors and subcontractors of the provisions of this Agreement and require as a condition precedent to the assigning, awarding, or subcontracting of any Covered Work, or allowing any subcontracted Covered Work to be performed, that all such contractors and subcontractors at all tiers become signatory to this Agreement. Any Contractor that fails to provide the Council with the Agreement to be

Bound executed by its contractor or subcontractor shall be liable for any failure of that contractor or subcontractor, or any contractor or subcontractor at a lower tier, to comply with the provisions of this Agreement, including any contributions to any trust funds that the contractor or subcontractor, or any subcontractor to that subcontractor, fails to make. Nothing in this Agreement shall be construed to interfere with or supersede the usual and customary legal remedies available to the Unions and/or employee benefit Trust Funds to collect delinquent Trust Fund contributions from Contractors on the Project.

3.5 Nothing in this Agreement shall limit the District's right to combine, consolidate, or cancel contracts for Project construction, or to comply with public agency contracting laws.

ARTICLE 4

WAGES AND BENEFITS

4.1 All employees covered by this Agreement (including foremen and general foremen if they are covered by the Master Agreement) shall be classified and paid wages and other compensation, including but not limited to travel, subsistence, and shift premium pay, and contributions made on their behalf to multi-employer trust funds, all in accordance with the then current multi-employer Master Agreement of the applicable Union and in compliance with the applicable prevailing wage rate determination established pursuant to the California Labor Code by the Department of Industrial Relations.

4.2 During the period of construction on this Project, the Contractors agree to recognize and put into effect such increases in wages and recognized fringe benefits as shall be negotiated between the various Unions and the historically recognized local bargaining parties on the effective date as set forth in the applicable Master Agreement. The Unions shall notify the Contractors in writing of the specific increases in wages and recognized fringe benefits and the date on which they become effective.

ARTICLE 5

NO STRIKES - NO LOCKOUTS

5.1 During the term of this Agreement, there shall be no strikes, sympathy strikes, picketing, work stoppages, picket-related hand billing, slowdowns, interference with the work or other disruptive activity for any reason by the Union or by any employee, and there shall be no lockout by any Contractor. Failure of any Union or employee to cross any picket line established at the Contractor's Project site is a violation of this Article.

5.2 The Union shall not sanction, aid or abet, encourage, or continue any work stoppage, strike, picketing or other disruptive activity at the Project site and shall undertake all reasonable means to prevent or to terminate any such activity. No employee shall engage in activities which violate this Article. Any employee who participates in or encourages any activities which interfere with the normal operation of the Project shall be subject to

disciplinary action, including discharge, and, if justifiably discharged for the above reasons, shall not be eligible for rehire on the same project for a period of not less than ninety (90) days.

5.3 The Union(s) agrees that if any union or any other persons, whether parties to this Agreement or otherwise, engage in any picketing or work stoppages, the signatory Unions shall consider such work stoppage or picketing to be illegal and refuse to honor such picket line or work stoppage.

5.4 In the event of any work stoppage, strike, sympathy strike, picketing interference with the work or other disruptive activity in violation of this Article, the Contractor may suspend all or any portion of the Project work affected by such activity at the Contractor's discretion and without penalty, and the District may replace any Contractor whose employees have not reported to work with any other contactor or subcontractor.

5.5 In addition to any other action at law or equity, any party may elect to have the matter decided by a neutral arbitrator in accordance with the following procedure when a breach of this Article is alleged, after the Union(s) or Contractor(s) has been notified of the fact.

5.5.1 A party invoking this procedure shall notify Robert Hirsch, as the permanent arbitrator, or Barry Winograd, as the alternate arbitrator under this procedure. In the event that the permanent arbitrator is unavailable at any time, the alternate will be contacted. If neither is available, then the American Arbitration Association shall select an alternative arbitrator within 24 hours of notice. Notice to the Arbitrator shall be by the most expeditious means available, with notice by fax or electronic means or any other effective written means to the party alleged to be in violation and the involved International Union President and/or local Union.

5.5.2 Upon receipt of said notice, the District Superintendent, or their designee, shall contact the designated Arbitrator identified above who will attempt to convene a hearing within twenty-four (24) hours if it is contended that the violation still exists.

5.53 The Arbitrator shall notify the parties by fax or electronic means or any other effective written means of the place and time he has chosen for this hearing. Said hearing shall be completed in one session. A failure of any party or parties to attend said hearing shall not delay the hearing of evidence or issuance of an Award by the Arbitrator.

5.5.4 The sole issue at the hearing shall be whether or not a violation of this Article has in fact occurred. The Award which shall be final, and binding shall be issued in writing within three (3) hours after the close of the hearing and may be issued without an opinion. If any party desires an opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the Award. The Arbitrator may order cessation of the violation of this Article by the Union or Contractor, and such Award shall be served on all parties by hand or registered mail upon issuance. Should a party found in violation of this Article

fail to comply with an Arbitrator's award to cease the violation, the party in violation shall pay to the affected party as liquidated damages the sum of ten thousand dollars ($10,000) for the first shift for which it failed to comply, or portion thereof, and ten thousand dollars ($10,000) for each subsequent shift for which it failed to comply, until such violation is ceased. The Arbitrator shall retain jurisdiction to resolve any disputes regarding the liquidated damages claimed under this Section.

5.5.5 Such Award may be enforced by any court of competent jurisdiction upon the filing of this Agreement and all other relevant documents referred to hereinabove in the following manner. The fax or electronic notice of the filing of such enforcement proceedings shall be given to the other party. In the proceeding to obtain a temporary order enforcing the Arbitrator's Award as issued under Section 5.5.4 of this Article, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the Arbitrator's Award shall be served on all parties by hand or by delivery to their last known address or by certified mail.

5.5.6 Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance therewith are hereby waived by the parties to whom they accrue.

5.5.7 The fees and expenses of the Arbitrator shall be borne by the party or parties found in violation, or in the event no violation is found, such fees and expenses shall be borne by the moving party.

5.6 The procedures contained in Section 5.5 shall be applicable to alleged violations of this Article. Disputes alleging violation of any other provision of this Agreement, including any underlying disputes alleged to be in justification, explanation, or mitigation of any violation of this Article, shall be resolved under the grievance procedures of Article 9.

5.7 In the case of nonpayment of wages or trust fund contributions on the Project, the Union shall give the District and the Contractor(s) three (3) business days' notice when nonpayment of trust fund contributions has occurred and one (1) business days’ notice when nonpayment of wages has occurred or when paychecks being tendered to a financial institution normally recognized to honor such paychecks will not honor such paycheck as a result of insufficient funds, of the intent to withhold labor from the Contractor(s)' or their subcontractor’s workforce, during which time the Contractor shall have the opportunity to correct the default. In this instance, a Union's withholding of labor (but not picketing) from a Contractor who has failed to pay its fringe benefit contributions or failed to meet its weekly payroll shall not be considered a violation of this Article. In the event the Union or any of its members withhold their services from such contractor or subcontractor, District shall have the right to replace such contractor or subcontractor with any other contractor or subcontractor who executes the Agreement to be Bound.

5.8 It will not be a violation of this Agreement when the Contractor considers it necessary to shut down to avoid the possible loss of human life because of an emergency situation that could endanger the life and safety of an employee. In such cases, employees will be compensated only for the actual time worked. In the case of a situation described above whereby the Contractor requests employees to wait in a designated area available for work, the employees will be compensated for the waiting time.

5.9 If a Master Agreement expires before the Contractor completes the performance of work under the Construction Contract and the Union or Contractor gives notice of demands for a new or modified Master Agreement, the Union agrees that it will not strike on work covered under this Agreement and the Union and the Contractor agree that the expired Master Agreement shall continue in full force and effect for work covered under this Agreement until a new or modified Master Agreement is reached. If the new or modified Master Agreement provides that any terms of the Master Agreement shall be retroactive, the Contractor agrees to comply with any retroactive terms of the new or modified Master Agreement which are applicable to employees who were employed on the projects during the interim, with retroactive payment due within seven (7) days of the effective date of the modified Master Agreement subject to section 4.3.

ARTICLE 6

WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

6.1 The assignment of Covered Work will be solely the responsibility of the Contractor performing the work involved; and such work assignments will be in accordance with the Plan for the Settlement of the Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

6.2 All jurisdictional disputes on this Project between or among the building and construction trades Unions and the Contractors parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department or any other plan or method of procedure that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding, and conclusive on the Contractors and Unions parties to this Agreement.

6.3 If a dispute arising under this Article involves the Northern California Carpenters Regional Council or any of its subordinate bodies, an Arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of John Kagel, Thomas Angelo, Robert Hirsch, and Thomas Pagan, and the Arbitrator's hearing on the dispute shall be held at the offices of the California State Building and Construction Trades Council in Sacramento, California within fourteen (14) days of the selection of the Arbitrator. All other procedures shall be as specified in the Plan.

6.4 All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature and the Contractor's assignment shall be adhered to until the dispute is resolved. Individual employees violating this section shall be subject to immediate discharge.

ARTICLE 7

JOINT LABOR/MANAGEMENT MEETINGS

7.1 Joint Labor/Management Meetings. During the period of any work performed under this Agreement, the Project Manager, or District designee, may schedule monthly Joint Labor/Management Meetings that include the Project Manager, or the District's designee, the Contractors and the Unions. The purpose of these meetings is to promote harmonious labor/management relations, ensure adequate communications and advance the proficiency and efficiency of the employees and the Contractors on the Project. These meetings may include a discussion of safety, craft resource requirements, scheduling and productivity of work performed at the Project. The Union representative shall keep minutes of any such meetings and the minutes shall be subject to approval at any subsequent meeting. Any such meetings may be in person, virtually or by conference call. It shall be mandatory for a representative of the Unions to participate in such meetings.

7.2 A Pre-Job Conference shall be scheduled by the District prior to the commencement of work to establish the scope of work in each Contractor's contract. When a contract has been let to a Contractor covered by this Agreement, a job conference and/or markup meeting shall be scheduled by the District upon request of any Union, Contractor or the District.

ARTICLE 8

MANAGEMENT RIGHTS

8.1 The Contractor(s) retains full and exclusive authority for the management of their work forces for all work performed under this Agreement. This authority includes, but is not limited to the right to:

A. Plan, direct and control the operation of all the work.

B. Decide the number and types of employees required to perform the work safely and efficiently. The lawful staffing provisions of the applicable Master Agreement shall be recognized.

C. Hire, promote and layoff employees as deemed appropriate to meet work requirements and/or skills required.

D. Require all employees to observe the District and Contractor Project Rules, Security and Safety Regulations, consistent with the provisions of this Agreement. These Project Rules and Regulations shall be reviewed and mutually agreed upon at the Pre-Job meeting and supplied to all employees and/or posted on the jobsite.

E. Discharge, suspension or discipline will be handled under the applicable craft agreement.

F. Assign and schedule work at its sole discretion and determine when overtime will be worked. There shall be no refusal by a craft to perform work assigned, including overtime work. However, individual craftspeople shall not be required to work overtime unless specifically dispatched for overtime work. Any cases of a craft's refusal to work overtime shall be subject to the grievance procedure.

G. Utilize any work methods, procedures or techniques and select and use any type or kind of materials, apparatus or equipment regardless of source, manufacturer or designator (in accordance with Article 2).

H. The foregoing listing of management rights shall not be deemed to exclude other functions not specifically set forth herein. The Contractors, therefore, retain all legal rights not specifically enumerated in this Agreement.

8.2 All workers employed or otherwise used on a Project shall comply with the District's Drug and Alcohol-Free Workplace Policy (BP 4020) and Employee Drug Testing Policy (BP 41 12.41, 4212.41, 4312.41) and applicable regulations as amended from time to time. If not otherwise specified, the drug testing protocol shall be in compliance with 49 Code of Federal Regulations (CFR) section 382.105 (Testing procedures) which incorporates 49 CFR Part 40.

ARTICLE 9

GRIEVANCE PROCEDURE

9.1 It is mutually agreed that any question arising out of and during the term of this Agreement involving its interpretation and application (other than matters subject to Section 5.5 and Union jurisdictional disputes subject to Article 6) shall be considered a grievance. Questions between or among parties signatory to a Master Agreement arising out of or involving the interpretation of a Master Agreement shall be resolved under the grievance procedure provided in that Master Agreement.

9.2 The District and other Contractors, as well as the Unions, may bring forth grievances under this Article.

9.3 A grievance shall be considered null and void if not brought to the attention of the effect party by the grievant within five (5) working days after the incident that initiated the alleged grievance occurred or was discovered, whichever is later. The term "working days" as used in this Article shall exclude Saturdays, Sundays, or holidays regardless of whether any work is actually performed on such days.

9.4 Grievances shall be settled according to the following procedure, except those grievances that do not involve an individual grievant, which shall be discussed by the District, and the Council and then, if not resolved within five (5) working days of written notice unless extended by mutual consent, commence at Step 4:

Step 1

The Steward and the grievant shall attempt to resolve the grievance with the craft supervisor within five (5) working days after the Grievance has been brought to the attention of the Contractor.

Step 2

In the event the matter remains unresolved in Step 1 above after five (5) working days, within five (5) working days thereafter, the alleged grievance may be referred in writing to the Business Manager(s) of the Union(s) affected and the site construction manager or Labor Relations representative of the Contractor(s) for discussion and resolution. A copy of the written grievance shall also be mailed, faxed or emailed to the District.

Step 3

In the event the matter remains unresolved in Step 2 above within five (5) working days, within five (5) working days thereafter, the grievance may be referred in writing to the Business Manager(s) of the affected Union(s) involved and the Manager of Labor Relations of the Contractor(s) or the Manager's designated representative and the District for discussion and resolution.

Step 4

If the grievance is not settled in Step 3 within five (5) working days, within five (5) days thereafter, either party may request the dispute be submitted to neutral arbitration or the time may be extended by mutual consent of both parties. The request for arbitration and/or the request for an extension of time must be in writing with a copy to the District. Should the parties be unable to mutually agree on the selection of a neutral Arbitrator, selection for that given arbitration shall be made by seeking a list of seven (7) labor arbitrators with construction experience from the Federal Mediation and Conciliation Service and alternately striking names from the list of names on the list until the parties agree on an Arbitrator or until one name remains. The first party to strike a name from the list shall alternate between the party bringing forth the grievance and the party defending the grievance. District shall keep a record of the sequence and shall notify the parties to the grievance as to which party has the right to strike a name first.

9.5 The Arbitrator shall conduct a hearing at which the parties to the grievance shall be entitled to present testimonial and documentary evidence. Hearings will be transcribed by a certified court reporter. The parties shall be entitled to file written briefs after the close of the hearing and receipt of the transcript.

9.6 Upon expiration of the time for the parties to file briefs, the Arbitrator shall issue a written decision that will be served on all parties and on the District. The Arbitrator shall have the authority to utilize any equitable or legal remedy to prevent and/or cure any breach or threatened breach of this Agreement. The Arbitrator's decision shall be final and binding as to all parties signatory to this Agreement.

9.7 The cost of the Arbitrator and the court reporter, and any cost to pay for facilities for the hearing, shall be borne equally by the parties to the grievance. All other costs and expenses in connection with the grievance hearing shall be borne by the party who incurs them.

9.8 The Arbitrator's decision shall be confined to the issue(s) posed by the grievance, and the Arbitrator shall not have the authority to modify, amend, alter, add to or subtract from any provision of this Agreement.

9.9 Any party to a grievance may invite the District to participate in resolution of a grievance. The District may, at its own initiative, participate in Steps 1 through 3 of the grievance procedure.

9.10 In determining whether the time limits of Steps 2 through 4 of the grievance procedure have been met, a written referral or request shall be considered timely if it is personally delivered, sent by overnight mail or faxed within the five (5) working day period. Any of the time periods set forth in this Article may be extended in writing by mutual consent of the parties to the grievance, and any written referral or request shall be considered timely if it is personally delivered, sent by overnight mail or faxed during the extended time period.

ARTICLE 10

EMPLOYEE REPRESENTATION AND REFERRAL

10.1 The Employers recognize the Unions as the sole bargaining representatives of all craft employees performing Covered Work under this Agreement. Authorized representatives of the Unions shall have reasonable access to the Project whenever work covered by this Agreement is being, has been, or will be performed on the Project. All authorized representatives of the Unions must comply with the required check-in procedure prior to visiting the work area.

10.2 Employees are not required to become or remain union members as a condition of performing Covered Work under this Agreement. Employers shall make and transmit all deductions for union dues, fees, and assessments that have been authorized by employees in writing in accordance with the applicable Master Agreement. Nothing in this Section 10.2 is intended to supersede the requirements of applicable Master Agreements as to those Employers otherwise signatory to such Master Agreements and as to the employees of those Employers who are performing Covered Work.

10.3 In filling craft job requirements, Employers performing Covered Work shall utilize and be bound by the registration facilities and referral systems established or authorized by the Unions ("Job Referral System"). Such Job Referral System shall be operated in a non-discriminatory manner and in full compliance with all federal, state, and local laws and regulations, including those which require equal employment opportunities and non-discrimination. The Employers shall have the right to reject any applicant referred by the Unions in accordance with this Article 10.

10.4 The Employers shall have the unqualified right to select and hire directly all supervisors above general foreman it considers necessary and desirable, without such persons being referred by the Unions.

10.5 In the event that referral facilities maintained by the Union are unable to fill the requisition of an Employer for employees within a forty-eight (48) hour period (Saturdays, Sundays and Holidays excluded) after such requisition is made by the Employer, the Employer shall

be free to obtain such workers from any source. An Employer who hires any personnel to perform Covered Work on the Project pursuant to this Section shall immediately provide the appropriate Union with the name and address of such employee(s) and shall immediately refer such employee(s) to the appropriate Union to satisfy the requirements of this Article 10.10.6 Unions will exert their utmost efforts to recruit sufficient numbers of skilled and trained craft persons to fulfill the requirements of the Contractor/Employer(s). On Projects governed by Education Code sections 17250.25 and 17407.5, the Unions shall consider a Contractor's request to transfer skilled and trained employees to work on Projects in a manner consistent with the Union's referral procedures.

10.7 Subject to the limitation of applicable law and the hiring hall procedures of the Unions, the Parties to this Agreement mutually support the development of increased numbers of skilled construction workers from District graduates and the residents of the City of Sacramento specifically and from the residents of Sacramento County generally, to meet the needs of the Projects and the requirements of the industry generally. To facilitate this goal, the Unions agree to encourage the referral and utilization of qualified District graduates and the City of Sacramento and Sacramento County residents as journeypersons and apprentices on the Projects.

ARTICLE 11

REFERRAL-LOCAL COMMUNITY WORKFORCE PROVISIONS

11.1 Contractors performing Covered Work on the Project shall, in filling craft job vacancies, utilize and be bound by the registration facilities and referral systems established or authorized by the Unions signatory to this Agreement. The Union will exert and document their best efforts to recruit and identify residents of the Local Area, in a manner that is consistent with the District's Core Value and Guiding Principle, and those individuals shall be referred for Project work first, to the extent allowed by law, and consistent with the Union's hiring hall provisions, and as long as they possess the requisite skills and qualifications, including journeymen and apprentices covered by this Agreement.

11.2 The Job Referral System shall be operated in a non-discriminatory manner and in full compliance with all federal, state, and local laws and regulations, including those which require equal employment opportunities and non-discrimination. The Contractor(s) shall have the right to reject any applicant referred by the Union(s), in accordance with the applicable Master Agreement. The Unions shall be the primary source of all craft labor employed on the Project, however, a Contractor with a core workforce may request by name, and the local Union shall honor, referral of such Contractor's regular and experienced personnel ("Core Employees") who have applied to the applicable Union to perform Covered Work on the Project. For purposes of this Agreement, a Core Employee is a person who meets all the following:

(l) Possesses any license required by state or federal law for the Project work to be performed;

(2) Worked a total of at least one thousand (l ,000) hours in the construction craft during the prior two (2) years;

(3) Has been on the Contractor's active payroll for at least ninety (90) out of the one hundred and twenty (120) calendar days prior to the contract award; and

(4) Has the ability to perform safely the basic functions of the applicable trade.

11.3 The Union will refer to such Contractor one journeyman employee from the hiring hall out-of-work list for the affected trade or craft and will then refer one of the Contractor's Core Employees as a journeyman, until such Contractor has hired six (6) Core Employees, whichever occurs first. Thereafter, all additional employees in the affected trade or craft shall be hired exclusively from the hiring hall out-of-work list(s). For the duration of the Contractor's work on the Project, the ratio shall be maintained. When such Contractor's workforce is reduced, employees shall be reduced in the same one for one ratio of Core Employees to hiring hall referrals as was applied in the initial hiring. Contractors that are signatory to a Master Agreement with Union(s) signatory hereto must comply with the hiring hall provisions contained in the applicable Master Agreement, and nothing in the referral provisions of this Agreement shall be construed to supersede the local hiring hall provisions of the Master Agreement(s) as they apply to such Contractors.

11.4 In the event the referral facilities maintained by the Unions do not refer the employees as requested by the Contractor within a forty-eight (48) hour period after such requisition is made by the Contractor (Saturdays, Sundays and holidays excepted), the Contractor may employ applicants from any source. Contractors shall immediately notify and provide the appropriate Union(s) with the name and address of such gate-hires, who shall be bound by the provisions of this Article.

It is in the interest of the parties to this Agreement to facilitate employment of District and Local Area residents, including parents, guardians or other care givers of students attending the District's schools, and to use resources in the Local Area in construction of a Project. The "Local Area" shall be defined as the area within the boundaries of the District, the City of Sacramento, Sacramento County, and the nine counties outlined in section 1.8.4, in priority order outlined in section 1.8. To the extent allowed by law, and consistent with the Union's hiring hall provisions, and as long as they possess the requisite skills and qualifications, residents of the Local Area shall be first referred for Project work, including journeymen and apprentices covered by this Agreement. It is the goal of the parties that not less than fifty (50) percent of all hours worked on the Project, on a craft-by-craft basis, be worked by residents of the Local Area (including fifty (50) percent of the total hours worked by any Core Employees). The Union shall provide a list of individuals referred for Project work and their applicable zip code of residence to the District, upon request. Contractors will be required to submit certified weekly payroll records to the District along with monthly workforce utilization reports documenting the Contractor's compliance with the requirements described in this Article. At a minimum, the monthly reports must include data on Local Area resident work hour utilization on the Project. An annual report shall be submitted to the Board on the number of workers employed, or contracted for,

within the Local Area. Provisions of this article shall be an item for discussion at each Pre-Job Conference outlined in Article.

ARTICLE 12

MUTUAL COMMITMENT TO SUPPORTING EDUCATIONAL AND CAREER DEVELOPMENT OPPORTUNITIES FOR DISTRICT STUDENTS

12.1 The Parties agree that this Agreement is also intended to formalize partnerships between the Unions and the District to support the educational and career development of the District's students, and to help develop the next generation of skilled construction workers. The Parties agree to support District Construction and Design Academies or Pathways within the District ("Academy" or "Pathway") in order to carry out the training and employment objectives of this Agreement, including providing District students with the opportunities and skills necessary to enter post-secondary study and to pursue lifelong training within the broader context of the building trades industry, and to develop and reinforce academic course standards in order to maximize career opportunities and technical competency. The Parties agree to the following actions in order to implement this mutual commitment.

12.2 Contractors shall employ apprentices in the respective drafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. The Parties agree that apprentices may comprise up to twenty (20) percent of each craft's workforce at any time, unless the state approved apprenticeship standards or regulations or the applicable Master Agreement establish a lower maximum percentage.

12.3 The Union shall provide speakers at District Academies, at no cost to the District, through the Multi-Craft Core Curriculum (MC3) program and at other mutually agreed upon school functions and events.

12.4 In order to facilitate the goals of the Academy, the District and Council agree to create an Advisory Board for the Luther Burbank High School Construction and Design Academy, American Legion High School's Residential and Commercial Construction Academy (collectively "High Schools"), Rosemont High School Engineering , Construction and Design, and participate in the District-level Pathway Advisory Board, which will conduct meetings as determined by the District during the school year to develop the goals of the Academy; plan for the presentation and content of training lectures to facilitate employable skills in the construction trades; develop a summer schedule for training; organize and develop summer internship positions; assist in planning curriculum scope and sequencing; design cocurricular activities; identify sources for educational and financial support; and otherwise initiate steps to carry out the goals of the Academy.

12.4.1 The High School Advisory Boards shall consist of the appropriate membership as outlined by current regulations and requirements placed upon the District. The Advisory Board, in coordination with the District's Career Services representative, shall develop and implement a plan for annual assessment of the goals and

objectives to maximize the employability of students and District graduates, including summer internship opportunities. A quorum for the Advisory Board meeting shall be at least one member representing the building trades JATCs; one member representing the Council; and one member representing the District.

12.4.2 The Academy Advisory Board will collaborate with post-graduate training programs, such as the Northern California Construction Training and American River College's Stripe Program, in order to assist graduates in obtaining an internship into a JATC.

12.4.3 The training and employment program of the interns shall be developed by the Academy Advisory Board such that graduating interns shall possess the skills, training, and educational background to help the graduate achieve priority on the lists of the building trades to the degree allowed under each JATC's application process including those programs that allow direct entry. It is recognized that the Apprenticeship Programs operate according to existing Standards approved by the California Department of Industrial Relations, Division of Apprenticeship Standards, and the standards set forth in the collective bargaining agreements for each building trades union and that any such priority shall be in accordance with such Standards and agreements.

12.5 The Parties agree to meet and identify additional mutually agreed upon specific actions to meet these goals, including, but not limited to, consideration of: (1) measures to facilitate teacher training in Multi-Craft Core Curriculum (MC3); (2) measures to provide student employment opportunities through externships, internships and/or post-graduation apprenticeship placement; (3) measures to provide hands-on training opportunities for students; (4) measures to facilitate identification of funding sources to provide recent women, minoritized and low-income District graduates scholarships or assistance in the purchase of tools and other equipment needed for apprenticeship programs; (5) support to identify and find funding for a Pre-Apprentice / Internship / Apprenticeship Coordinator to assist District Academies. These additional commitments shall be set forth in a Memorandum of Understanding (MOU) to this Agreement ("Union Educational and Career Development Support MOU"). Parties agree to meeting twice before August 1, 2022, and throughout the month of August to identify the mutually agreeable terms of the MOU and shall finalize the MOU no later than September 1, 2022.

12.6 The Union shall provide the District with an annual report by June 30 of each year on the implementation of the provisions set forth in this Article and in the Union Educational and Career Development Support MOU. The report shall provide any information requested by the District to assist the District in reporting work-based learning indicator on the State of California's College and Career Dashboard.

ARTICLE 13

NON-DISCRIMINATION

13.1 The Unions and Contractors shall not discriminate against any employee or applicant for employment because of race, creed, color, sex, sexual orientation, political affiliation, national origin, age, religion, Vietnam veteran or Vietnam Era status, disability as identified in the Americans with Disabilities Act, membership in a labor organization in hiring and dispatching workers for the Project, or any other basis recognized by law. The parties to this Agreement understand and agree that nothing in this Agreement shall supersede or take precedence over any District Board of Education policy or requirement including, but not limited to, the construction contract and general conditions for the Project.

13.2 All qualified (as determined by the District and applicable law) contractors and subcontractors may bid and be awarded work on a Project without regard to whether they are otherwise parties to collective bargaining agreements provided they comply with the provisions of this Agreement.

ARTICLE 14

HOURS OF WORK SHIFTS AND HOLIDAYS

14.1 The standard workday shall be in accordance with the applicable Master

Agreements. Common start times may be established by the Contractor during the standard workday established by the applicable Master Agreements. The standard work week shall be five (5) consecutive days of work commencing on Monday. Nothing herein shall be construed as guaranteeing any employee eight (8) hours of work per day or forty (40) hours of work per week.

14.2 Common shifts may be established when considered necessary by the Contractor. The Contractor shall provide at least one week notice to the Council prior to any change in shift time. Any shifts established shall continue for the established work week.

14.3 Recognized holidays shall be in accordance with the applicable Master Agreements. Under no circumstances shall any work be performed on Labor Day except in cases of emergency involving life or property. In the event a holiday falls on Saturday, the previous day, Friday, shall be observed as such holiday. In the event a holiday falls on Sunday, the following day, Monday, shall be observed as such holiday. There shall be no paid holidays. If employees are required to work on a holiday, they shall receive the appropriate rate, but in no case shall such overtime rate be more than double the straight time rate.

ARTICLE 15

GENERAL PROVISIONS

15.1 If any article or provision of this Agreement shall become invalid, inoperative and/or unenforceable by operation of law or by declaration of any competent authority of the executive, legislative, judicial or administrative branches of the federal or state government, the District, the Contractors and the Council shall suspend the operation of such article or provision during the period of its invalidity, and the District and the Council shall negotiate in its place and stead an article or provision that will satisfy the objections to its validity and that, to the greatest extent possible, will be in accord with the intent and purpose of the article or provision in question. The new article or provision negotiated by the District and the Council shall be binding on all parties signatory to this Agreement.

15.2 If any article or provision of this Agreement shall be held invalid, inoperative or unenforceable by operation of law, or by any of the above-mentioned tribunals of competent jurisdiction, the remainder of the Agreement or application of such article or provision to persons or circumstances other than to which it has been held invalid, inoperative or unenforceable shall not be affected thereby.

15.3 Except as enumerated in this Agreement, all other terms and conditions of employment described in the Master Agreement of the Union having traditional and customary jurisdiction over the Covered Work shall apply.

15.4 The provisions of this Agreement shall take precedence over conflicting provisions of any Master Agreement or any other national, area or local collective bargaining agreement, except for all work performed under the NTL Articles of Agreement, the National Stack/Chimney Agreement and the National Cooling Tower Agreement. In addition, all instrument calibration work and loop checking Covered Work shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, and work within the craft jurisdiction of the Elevator Constructors will be performed under the terms of the National Agreements of the International Union of Elevator Constructors. Notwithstanding the provisions of this section, Articles 5, 6 and 9 of this Agreement shall apply to all Covered Work.

15.5 Each person executing this Agreement represents and warrants that he or she is authorized to execute this Agreement on behalf of the party or parties indicated.

15.6 This Agreement may be executed in any number of counterparts, and each counterpart shall be deemed to be an original document. All executed counterparts together shall constitute one and the same document, and any signature pages may be assembled to form a single original document.

15.7 To the fullest extent consistent with the applicable Master Agreement and trust agreement, it is agreed that any liability under this Agreement by District, the Council, a Union, or any other Contractor shall be several and not joint. Any alleged breach of this Agreement by a party shall not affect the rights, liabilities, obligations, and duties among the other parties or between that party and any other party.

ARTICLE 16

HELMETS TO HARDHATS

16.1 The Contractors and Unions recognize a desire to facilitate the entry into the building and construction trades of veterans and members of the National Guard and Reserves who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center"), a joint Labor-Management Cooperation Trust Fund, established under the authority of Section 6(b) of the Labor-Management Cooperation Act of 1978, 29 U.S.C. Section 175(a), and Section 302(c)(9) of the Labor-Management Relations Act, 29 U.S.C. Section and a charitable tax exempt organization under Section 501 (c)(3) of the Internal Revenue Code, and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

16.2 The Unions and Contractors agree to coordinate with the Center to create and maintain an integrated database of veterans and members of the National Guard and Reserves interested in working on this Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Contractors and Unions will give credit to such veterans and members of the National Guard and Reserves for bona fide, provable past experience.

ARTICLE 17

DURATION OF AGREEMENT; MID-TERM ASSESSMENT

17.1 This Agreement shall remain in full force and effect for a period of five (5) years from the date approved by the Board of Education on June 9, 2022. Notwithstanding the term of the Agreement as set forth above, the Agreement will continue to apply until the completion of all Covered Work pursuant to Section 2.1 where the initial bid for any Construction Contract for a Project is awarded or approved by the Board on or before the date the Agreement terminates.

17.2 At the two-year mark, a mid-term assessment, including mutually agreed upon metrics, shall be reported to the Board.

SIGNATURES

Sacramento City Unified School District

Christina Pritchett Date: 8/5/22

Name: Christina Pritchett

Title: SCUSD Board President.

Sacramento-Sierra Building and

Construction Trades Council

DocuSigned by:
Kevin Ferreira
B4C87250B34241A... Date: _____

Name: Kevin Ferreira

Title: Executive Director

Sacramento-Sierra Building and

Construction Trades Council

Karl Pineo Date: 7-29-22

Name: Karl Pineo

Title: President

DocuSign Envelope ID: F932C669-183B-4831-96FA-B972F05A003B

Sacramento-Sierra Building and

Construction Trades Council

Date: 8/2/2022

Name: Todd Schiavo

Title: Vice-President

UNIONS

DocuSigned by:
6C910C1A0D294D5...
Asbestos Workers Local #16

DocuSigned by:
CD7DE50D9167457...
Iron Workers Local #118

DocuSigned by:
D48B5A45BA76425...
Bricklayers Local #3

DocuSigned by:
C20514D4BD51437...
Laborers Local #185

DocuSigned by:
C23CEC6C30BC44A...
Boilermakers Local #549

Operating Engineers Local #3

DocuSigned by:
4F8BF44AA19D47C...
Cement Masons Local #400

DocuSigned by:
BB5F4751AD96435...
Plasterers & Cement Masons Local #300

DocuSigned by:
C10D2576816641F...
Asbestos, Lead and Mold Laborers Local #67

DocuSigned by:
18EECB2BF4504BA...
UA of Journeymen & Apprentices of the Plumbing & Pipe Fitting Ind. Local #355

DocuSigned by:
0D9AD26FD7DF4CE...
District Council #16 International Union of Painters & Allied Trades

DocuSigned by:
9CC33EC099FB4FA...
Plumbers & Pipefitters Local #447

DocuSigned by:
B9EDEF97DCC4462...
Elevator Constructors Local #8

DocuSigned by:
09D284A82D354D7...
Roofers Local #81

DocuSigned by:
C0069C1D0CA54AC...
International Brotherhood of Electricians Local #340

DocuSigned by:
73EA33F8D61046A...
Sheet Metal Workers Local #104

DocuSigned by:
9BF3BF3C661649A...
Sprinkler Fitters Local #669

DocuSigned by:
BC6F45A38B6746A...
Teamsters Local #150

Northern California Carpenters Regional Council on behalf of itself and its affiliated Local Unions

4942-008j

UNIONS

Asbestos Workers Local #6

Laborers Local #185

Bricklayers Local #3

Millwrights Local #102

Boilermakers Local #549

Northern California District Council of Laborers

Carpenters 46 Northern California Counties Conference Board

Operating Engineers Local #3

Cement Masons Local #400

Plasterers & Cement Masons Local #300

District Council #16 International Union of Painters & Allied Trades

Pile Drivers Local #34

District Council of Plasterers & Cement Masons of Northern California

Plumbers & Pipefitters Local #447

Drywall/Latherers Local #9109

Roofers Local #81

International Brotherhood of Electricians Local #340

Sheet Metal Workers Local #104

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ATTACHMENT A

PROJECT LABOR AGREEMENT

Project:
Bid Number:

AGREEMENT TO BE BOUND

SACRAMENTO CITY UNIFIED SCHOOL DISTRICT

The undersigned hereby certifies and agrees that:

1.) It is a Contractor as that term is defined in Section I .7 of the Sacramento City Unified School District Agreement ("Agreement") because it has been, or will be, awarded a contract or subcontract to assign, award or subcontract Covered Work (as defined in Section 2.3) on the Project (as defined in Section 1.9), or to authorize another party to assign, award or subcontract Covered Work, or to perform Covered Work.

2.) In consideration of the award of such contract or subcontract, and in further consideration of the promises made in the Agreement and all attachments thereto (a copy of which was received and is hereby acknowledged), it accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing, or which are later made thereto.

3.) If it performs Covered Work, it will be bound by the legally established trust agreements designated in local master collective bargaining agreements, and hereby authorizes the parties to such local trust agreements to appoint trustees and successor trustee to administer the trust funds, and hereby ratifies and accepts the trustees so appointed as if made by the undersigned.

4.) It has no commitments or agreements that would preclude its full and complete compliance with the terms and conditions of the Agreement.

5.) It will secure a duly executed Agreement to be Bound, in form identical to this document, from any Contractor(s) at any tier or tiers with which it contracts to assign, award, or subcontract Covered Work, or to authorize another party to assign, award or subcontract Covered Work, or to perform Covered Work, and it will provide a copy of such executed Agreement to be Bound to the Sacramento-Sierra Building & Construction Trades Council within fifteen (15) days of such contracting or subcontracting in accordance with Section 3.2 of the Agreement.

DATED: _____ Name of Contractor _____

_____
(Authorized Officer & Title)

_____

_____
(Address)

Section 01 31 00 - PROJECT MANAGEMENT INTERNET COMMUNICATION REQUIREMENTS

NOT USED

Section 01 31 19 - PROJECT MEETINGS & PROCEDURES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. The District Representative will schedule and administer a preconstruction meeting, regular progress meetings, and specially called meetings throughout progress of the Work, and will:

1. Prepare agenda for meetings.
2. Make physical arrangements for meetings.
3. Preside at meetings.
4. Record the minutes; include significant proceedings and decisions.
5. Reproduce and distribute copies of minutes after each meeting to participants in the meeting and to parties affected by decisions made at meeting.

B. Representatives of Contractor, Subcontractors and suppliers attending meetings shall be experienced supervisory staff with written authorization to act on behalf of the entity each represents.

1.02 PRECONSTRUCTION MEETING

A. Timing: Prior to start of construction.

B. Attendance: Architect and consultants as appropriate, District Representative, Contractor, Project Inspector and Subcontractors when required by District to attend.

C. Purpose: Discuss and familiarize Contractors with construction administrative procedures to be used on the Project.

1.03 PROGRESS MEETINGS

A. Timing: Frequency, day and time to be determined by the District Representative, Architect and District.

B. Attendance: District Representative and each contractor on site; Architect, consultants, Project Inspector, and Subcontractors when required.

C. Purpose: The purpose of these meetings is to provide a formal and regular forum for the District, District Representative, Architect/Engineer and the Contractors to present questions, problems or issues that need to be addressed. It will also provide an opportunity to review the progress on previous issues and action items along with submittal and schedule review.

D. Each Contractor scheduled to commence Work within the following week will attend the current week's meeting to coordinate Work with other contractors already on site.

1.04 SPECIALLY CALLED MEETINGS

A. The District Representative may call a special meeting at any time during the course of the Project. Special Project meetings shall include representatives of the Project as requested in order to discuss problems and/or solutions that are common to the Project.

END OF SECTION

Section 01 35 16 - ALTERATION PROJECT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Products and installation for patching and extending Work.

B. Transition and adjustments.

C. Repair of damaged surfaces, finishes, and cleaning.

D. Salvage materials.

1.02 RELATED SECTIONS

A. Section 01 73 29 - Cutting and Patching.

B. Section 02 41 00 - Minor Demolition for Remodeling.

1.03 ALTERATIONS, CUTTING AND PROTECTION

A. Assign the work of moving, removal, cutting and patching, to trades qualified to perform the work in manner to cause least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work.

1. Cut finish surfaces such as concrete, masonry, drywall, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division, or where indicated.

C. Protect existing finishes, equipment, and adjacent work, which are scheduled to remain, from damage.

1. Protect existing and new' work from extremes of temperature.
   a. Maintain existing Interior work above 60 degrees F
   b. Provide heat and humidity control as needed to prevent damage to remaining existing work and to new work.

D. Provide temporary enclosures to separate work areas from existing building and from areas occupied by the District.

PART 2 PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials. As specified in product Sections; match new materials to existing work.

1. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing work.

2. Presence of a product, finish, or type of construction, requires that patching, extending or matching shall be performed consistent to, or better than, existing standards of quality.

B. Type and Quality of Existing Products: Determine by inspection and testing existing products where necessary, referring to existing Work as a standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that demolition is complete, and areas are ready for installation of new Work.

B. Beginning of restoration Work means acceptance of existing conditions.

3.02 PREPARATION

A. Cut, move, or remove items as necessary for access to alterations and/or renovation Work. Replace and restore at completion. The full extent of cutting and patching is not shown or specified. The Contractor shall perform all cutting and patching as required.

B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

C. Remove debris and abandoned items from area and from concealed spaces.

D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

3.03 INSTALLATION

A. Coordinate work of alterations and renovations to expedite completion and to accommodate District occupancy. Patch and extend existing work using skilled mechanics that are capable of matching existing quality of workmanship. Quality of patched or extended work shall be not less than that Specified for new work.

B. Room Finishes. Complete in all respects consistent with the Contract Documents.

C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to specified condition.

D. Install Products as specified In Individual Sections.

3.04 TRANSITIONS

A. Where new Work abuts or aligns with existing, perform a smooth and even transition.

B. Patch Work to match existing adjacent Work in texture and appearance, without breaks, steps or bulkheads.

C. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

3.05 ADJUSTMENTS

A. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition.

B. Where extreme change of plane of two inches or more occurs, request Instructions from Architect as to method of making transition.

C. Trim existing doors as necessary to clear new threshold Installation. Refinish trim as required.

D. Fit work at penetrations of surfaces as shown on drawings.

3.06 SALVAGED MATERIALS

A. Salvaged Materials from existing facilities, which are specified in the Special Provisions, identified in bid doc's or tagged in the field are to be salvaged and shall remain the property of the District. The Contractor shall include the removal, disassembly, preparation, marking, bundling, packaging, tagging, hauling, and stockpiling of salvaged materials or facilities to the location specified in the Special Provisions, or as directed by the District Representative. Materials include, but are not limited toparts, articles, and equipment of assembled facilities. Salvaging does not include the preparation of existing material that is to be reused in the work.

B. When only specific materials from the facility are designated to be salvaged, the remaining materials from that facility shall be removed and disposed of as provided for elsewhere in the Contract Documents. Materials to be salvaged shall not be removed until their use in the existing facility is no longer required, as determined by the District Representative.

C. When practicable, salvaged materials shall be hauled directly to the location specified in the Special Provisions and stockpiled; however, salvaged materials may be temporarily stored at a location selected by the Contractor and approved by the District Representative and later hauled to and stockpiled at their final location. Materials which are lost before stockpiling at their final location shall either be replaced by the Contractor, at the Contractor's expense, or, at the discretion of the District Representative, the estimated cost of replacement may be deducted from any moneys due or to become due to the Contractor.

D. Materials designated to be salvaged that are damaged, as determined by the District Representative, shall be segregated from undamaged material. After review of the damaged materials by the District Representative, all damaged materials that are rejected by the Districts Representative shall become the property of the Contractor and shall be disposed of as provided elsewhere in the Contract Documents.

E. Materials to be salvaged that are damaged as a result of the Contractor's operations shall be repaired by the Contractor, at the Contractor's expense, to the satisfaction of the District Representative. Materials that are damaged beyond repair as a result of the Contractor's operations shall be disposed of as provided elsewhere in the Contract Documents and replaced at the Contractor's expense; or, at the discretion of the District Representative, the estimated cost of replacement may be deducted from any moneys due or to become due to the Contractor.

F. Replacements for lost or damaged materials shall be of the same kind and of the same or better quality and condition as the lost or damaged materials were prior to their removal. Replacement materials should also be of the same size, color, weight etc. of the original materials. Matching or exceeding quality and condition alone may not permit the reuse of material.

3.07 REPAIR OF DAMAGED SURFACES

A. Patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections.

B. Repair substrate prior to patching finish.

3.08 FINISHES

A. Finish surfaces as specified in Individual Product Sections.

B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest Intersections.

C. Unless otherwise specified or shown, subsurfaces shall be prepared as recommended by finish material manufacturers for project conditions for the proper application of new finishes.

3.09 CLEANING

A. Clean adjacent Owner-occupied areas of work soiled by work of this contract (See General Conditions Section 00 72 00, Article 19).

END OF SECTION

Section 01 41 00 - ADDITIONAL REQUIREMENTS FOR DSA-REVIEWED PROJECTS

NOT USED

Section 01 45 00 - QUALITY CONTROL

PART 1- GENERAL

1.01 SECTION INCLUDES

A. Quality assurance and control of installation.

B. References.

C. Field samples.

D. Mock-up.

E. Inspection and testing laboratory services.

F. Manufacturers' field services and reports.

1.02 RELATED SECTIONS

A. Section 00 72 00-General Conditions, Article 11- Submittals

B. Technical Specifications

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step-in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

G. Contractor’s Line of Authority: Contractor shall provide one person who shall be both knowledgeable and responsible for all work to be performed on this project at all times during normal work hours. In Contractors absence, Contractors appointed representative shall be responsible for all directions given him/her and said directions shall be binding as if given to the Contractor. Contractor’s representative shall be responsible to coordinate all work to be performed.

H. Shop and fieldwork shall be performed by mechanics skilled and experienced in the fabrication and installation of the work involved. All work on this project shall be done in accordance with the best practices of the various trades involved and in accordance with the drawings, approved shop drawings and these specifications.

I. All work shall be erected and installed plumb, level, square and true and in proper alignment and relationship to the work of other trades. All finished work shall be free from defects. The Architect, Engineer, District and its representatives reserves the right to reject any materials and workmanship which are not considered to be up to the highest standards of the various trades involved. Such Inferior material or workmanship shall be replaced by the Contractor at no additional cost to the District and without an extension of the Contract Time.

J. All work shall be installed by a knowledgeable contractor and defined "certified to install" by the specified materials manufacturers. The specifications and recommendations of the manufacturer whose materials are used shall be strictly adhered to during the application or installation of materials.

K. Any additional work beyond that specified or illustrated, or any modification thereto, that is necessary for the furnishing of guarantee shall be provided by the Contractor without additional cost to the District.

1.04 REFERENCES

A. Conform to reference standards by date of issue current on date of the Contract Documents.

B. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

D. The Contractor shall be responsible for being current and knowledgeable of all building codes involved for all trades under his direction.

E. Provide all work and materials in full accordance with the California Building Standards Administrative Code, the California Building Code (CBC), California Electrical Code (CEC), California Mechanical Code (CMC), California Plumbing Code (CPC), California Energy Code, California Fire Code (CFC), California Referenced Standards, State Fire Marshal Regulations, Cal/OSHA, and any other applicable laws or regulations. Nothing in these plans or specifications is to be construed to permit work not conforming to these Codes

F. Furnish without extra charge any additional material and labor required to comply with these Rules and Regulations.

1.05 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications Sections for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field sample is specified in Individual Sections to be removed, clear area after field sample has been accepted by Architect.

1.06 MOCK-UP

A. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes.

B. Where mock-up is specified in Individual Sections to be removed, clear area after mock-up has been accepted by Architect.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

A. The District will appoint, employ, and pay for services of an independent firm approved by the Structural Engineer, Architect and Division of the State Architect (DSA) to perform special inspection and testing.

B. The Independent firm will perform special inspections, tests, and other services specified in Individual specification Sections and as required by the Architect.

C. Reports will be submitted by the independent firm to the Architect, Owner and DSA, indicating observations and results of tests and indicating compliance or noncompliance with Contract Documents.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
1. Notify Architect and independent firm 24 hours prior to expected time for operations requiring services.
2. Make arrangements with independent firm and pay for additional samples and tests required for Contractors use.

E. The special inspector shall perform inspection of all work to determine conformance with these Standards.
1. Request for inspection must be made to the office of the special inspector a minimum of 24 hours in advance of the time the inspection is desired.
2. Underground work shall not be backfilled or covered until an inspection by the special inspector or his representative has been completed and the work approved. Any work that is covered without inspection shall be uncovered at the Contractors expense so an inspection can be made.
3. The Engineer shall have access to the work at all times and shall be furnished every reasonable facility for ascertaining that the work done, materials used and workmanship performed are in accordance with the requirements of these Standards.
4. Inspection of the work shall not relieve the Contractor of any of its obligations to satisfactorily perform the work.

F. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect. Payment for re-testing will be charged to the Contractor by deducting inspection or testing charges from the Contract Price.

G. An Inspector of record shall be employed by The District and approved by Architect, Structural Engineer, and DSA.

1.08 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. Submit qualifications of observer to Architect 30 days in advance of required observations.

B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit report in duplicate within 30 days of observation to Architect for review.

PART 2 - PRODUCTS - Not Used
PART 3 - EXECUTION - Not Used

END OF SECTION

Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

ARTICLE 1. GENERAL

SECTION 1.01 WORK INCLUDED

Temporary Facilities and controls required for this Work include, but are not necessarily limited to:

1. Temporary water, power, light, and heat.
2. Field office and associated telephone and utilities.
3. Temporary weather protection.
4. Parking and storage areas.
5. Site fencing and security.
6. Sanitary facilities.
7. Dewatering.
8. Storm Water Run-Off Plan Compliance
9. Final and course of construction cleanup and removal of debris.
10. Erosion Control.
11. Emergency power and water shut-off.

SECTION 1.02 TEMPORARY UTILITIES

General: Charges for the use of utility services other than those associated with individual field offices or planned electrical service interruptions will be paid for by the District. Each Contractor shall provide temporary heating, or ventilating, or cooling when permanent services are interrupted due to performance of their Work. Each Contractor shall provide temporary means of operation for existing storm, water, sewer, gas, mechanical, electrical, and low voltage systems during construction. Any planned interruption of permanent services, facilities, or operations must be coordinated and approved in advance with the District Representative.

Temporary Power:
Each Contractor shall construct all temporary power facilities required to complete Bid Package scope of Work and maintain in accordance with Division of Industrial Safety "Electrical Safety Orders" (ESO), Public Utilities Commission "Rules of Overhead Line Construction" (G.O. 95), and CAL-OSHA. Materials, devices and equipment used for these facilities shall be in good and safe condition but need not be new. Contractor is responsible for the removal of the temporary power. Existing school electric outlets may be utilized, if permitted by the District and authorized by the District Representative. Any additional power required shall be provided and paid for by the contractor.

Temporary Lighting:
Each Contractor shall provide, maintain, and remove temporary lighting necessary to complete the Bid Package Scope of Work.

Temporary Heat:
Each Contractor shall provide, maintain, and remove temporary heat necessary to complete Bid Package Scope of Work.

Temporary Water:
Each Contractor shall provide sufficient hose to carry water to every required part of construction and allow use of water facilities to Subcontractors engaged in Work. Contractor is also responsible for the removal of the temporary water. Existing school water outlets may be utilized. Any additional water required shall be provided by the Contractor.

Temporary Telephone:
Each Contractor shall provide their own telephone system. Use of District telephones will not be allowed.

Temporary Fire Protection:
Each Contractor shall provide and maintain fire extinguishers and first aid kits in accordance with OSHA requirements to be used in the event of an emergency.

Temporary Weather Protection:
Each Contractor shall provide and maintain protection measures and Best Management Practices to ensure that damage(s) will not occur to District property during course of construction and protect the District from State Water Resources Control Board actions.

Temporary Dewatering:
Each Contractor shall provide and maintain a dewatering system as required to perform its/their Work. This temporary dewatering system may, and should, be reviewed by the Architect and/or the District Representative.

SECTION 1.03 FIELD OFFICE/STORAGE CONTAINERS

If desired, the Contractor may provide a temporary field office(s) or storage container(s). Locate field office(s)/storage container(s) as directed by the District Representative. Upon completion of Work, Contractor shall remove any and all temporary field office(s) and storage container(s).

SECTION 1.04 PARKING OF VEHICLES

Each Contractor shall assume **all** responsibility for job site vehicle parking of his and his Subcontractor's vehicles. Locations of parking shall be as directed by the District Representative. School sites may not accommodate on-site parking of construction personnel vehicles. Contractor shall assure compliance with all applicable requirements for on-street vehicle parking.

SECTION 1.05 STORAGE AND LAYDOWN AREAS

The District Representative will coordinate use of available laydown areas among various contractors. Only areas designated by the District Representative can be used by Contractors. Each contractor is responsible for providing his own fenced storage facilities (trailers or cargo containers.)

SECTION 1.06 TEMPORARY SITE FENCING AND SECURITY

Each Contractor shall provide and maintain temporary fencing surrounding the buildings and/or rooms under construction, and staging areas. Set-up/relocation of temporary fencing shall be included for each phase of work as shown on the Preliminary Construction Schedule. Contractor is responsible for the security of all equipment, material, and completed construction items. Contractor is also responsible for securing any breeches to existing security system/building caused by his Work. Temporary measures may include watchman, temporary doors, temporary alarm, etc.

SECTION 1.07 SANITARY FACILITIES

Each Contractor shall provide sanitary toilet facilities for use of all Workers employed on Project, in accordance with State and Local health departments. Use of District toilet facilities will not be allowed.

SECTION 1.08 CLEAN UP AND REMOVAL OF DEBRIS

Each Contractor shall assume all responsibility for cleanup and removal of debris created by his Scope of Work on a daily basis. No community dumpsters will be provided. In the event unidentifiable job site clutter or debris becomes a problem, at the District Representative's request, each contractor shall provide sufficient labor to be directed by the District Representative's personnel in a group cleanup effort. If a Contractor's clean-up is found to be deficient, the District may backcharge the Contractor for clean-up and/or withhold progress payments as determined appropriate by the District in accordance with Section 12.06, Para E, General Conditions Section 00 72 00.

SECTION 1.09 TEMPORARY CONSTRUCTION, EQUIPMENT AND PROTECTION

Contractor shall provide, maintain and remove upon completion of Work, all temporary rigging, scaffolding, hoisting equipment, rubbish chutes, ladders, barricades, lights and all other protective structures or devices necessary for safety of Workers and public property as required to complete the Bid Package Scope of Work.

Safety: The contractor is responsible for the complete safety of district personnel, students, and the general public at all times.

Walkways and barricades: If Contractor's portion of Work interferes with pedestrian traffic, provide pedestrian walkway protection conforming to City standards and CAL OSHA requirements.

Access: The contractor is responsible to maintain access to the buildings at all times. Temporary covered walkways and/or barricades may be required.

Protection: Each Contractor must protect all Workers and equipment from power lines by maintaining safe distances and by providing protective devices where and as required by Industrial Safety Commission and CAL-OSHA.

Temporary construction and equipment: All temporary construction and equipment shall conform to all regulations, ordinances, laws and other requirements of State and any other authorities having jurisdiction (including insurance companies), with regards to safety precautions, operations and fire hazards.

SECTION 1.10 EROSION CONTROL

If any soil will be disturbed as part of the scope or course of work, the Contractor must protect disturbed area from erosion and protect the storm drain system from contamination.

- For projects requiring a SWPPP based on State Water Resource Control Board (SWRCB) requirements a SWPPP will be provided by the District unless otherwise stated in the project documents. Projects available for an Erosivity Waiver will have such filed by the District unless otherwise stated in the project documents. All projects, whether under the control of a SWPPP or not shall maintain Best Management Practices to ensure the limiting of erosion and sedimentation. Under no circumstances shall sediment be allowed to leave the project site.
- The contractor shall retain a Qualified SWPPP Practitioner (QSP) to inspect the construction site to ensure compliance with the SWPPP and SWRCB requirements. The Contractor shall implement all measures required by the QSP.
- During the course of the Contract the Contractor shall file all necessary documentation with the SWRCB. At the completion of the contract the Contract the Contractor shall file a Notice of Termination with the SWRCB and provide documentation of such to the District.

SECTION 1.11 EMERGENCY POWER AND WATER SHUT-OFF

The Contractor is responsible to know where all water and power shut-off devices are located and to have the proper tools to operate shut-off valves. The Contractor shall post a site map in a location readily available to workers.

SECTION 1.12 STORM WATER RUN-OFF PLAN:
Not Applicable.

PART 2 - PRODUCTS
Not Used
PART 3 - EXECUTION
Not Used

END OF SECTION

Section 01 71 23 - FIELD ENGINEERING & SURVEY CONTROLS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Contractor to provide and pay for field engineering services required for the execution of Work, including, but not limited to:

1. Survey Work required in execution of the Bid Package Work scope.
2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.

B. Provide field staking of site improvements included in Bid Package; identify existing survey reference points and property line corner stakes indicated on Drawings.

C. Locate and be aware of all existing on-site utility lines and improvements.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified California registered professional engineer or registered land surveyor, acceptable to Contractor and the District Representative.

B. Registered professional engineer of discipline required for specific service on Project, licensed in State of California.

1.03 SUBMITTALS:

A. Submit name, address, and license of surveyor and professional engineer to the District Representative.

1.04 PROJECT SURVEY REQUIREMENTS

A. Establish and maintain lines and levels as necessary to locate and layout entire scope of Work in Bid Package.

B. Preserve and protect all on-site underground utilities lines and existing on-site improvements in the area of construction.

END OF SECTION

Section 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Execute cutting, fitting or patching of Work, required to:
   1. Make parts fit properly.
   2. Uncover Work to provide for installation of ill-timed Work.
   3. Remove and replace Work not conforming to requirements of Contract Documents.
   4. Remove and replace defective Work.
   5. Remove samples of installed Work as specified for testing.
   6. Remove existing materials (demolition) required prior to installation of specified Work.
   7. Uncover Work to provide for Architect's observation of covered Work.

B. Do not endanger structural integrity of any Work by cutting or altering any part of it.

C. The Contractors with structural responsibility within their scope of Work shall solely execute structural cutting and patching required for this Project, according to DSA Approved Drawings.

D. Minor cutting and patching of finishes and/or trim will be performed by the Contractor where required for the execution of his Work. Locations of all cutting and patching (core boring, etc.) shall be reviewed and approved by the Architect prior to the start of Work.

E. The Contractor shall make the field measurements necessary for its Work and be responsible for its accuracy. Also, should any structural difficulties prevent a Contractor from installing its material properly, the District Representative and Architect shall be notified in writing within 24 hours. Cutting into the walls, ceilings and floors, if necessary, shall be carefully and neatly performed and then be repaired as specified in the Contract Documents. The Architect shall be consulted prior to the start of Work in all cases where cutting into a structural portion of the building is either desirable or necessary so that satisfactory reinforcement may be provided.

F. Patching of all exposed architectural finishes shall be performed under the supervision of the Inspector. Cutting and patching of existing architectural finishes shall be minimized to the extent possible through careful routing and placement of new Work. The Architect or Inspector shall have the authority to reject substandard or unacceptable patching.

G. Patching of openings that are cut in any fire rated walls or membranes shall be sealed tightly using approved materials only. Verify that fire rating envelopes are maintained and inspections provided prior to concealing Work. Cutting and patching, if required by Agencies to verify adequacy of protection after concealment, shall be performed at no cost to the District.

1.02 RELATED SECTIONS

A. Section 00 72 00 - General Conditions.

B. Section 00 73 00 - Special Provisions.

C. Section 01 35 16 - Alteration Project Procedures.

D. Section 01 45 00 - Quality Control.

E. Section 01 50 00 - Construction Facilities and Temporary Controls.

1.03 SUBMITTALS

A. Prior to cutting which affects structural safety of Project, submit written notice to Architect requesting consent to proceed with cutting. See items “C” and “E”, Section 1.01.

B. Should conditions of Work or schedule require change of materials or methods, submit written recommendation to Architect, within 48 hours, including:
   1. Conditions requiring change.
   2. Recommendations for alternative materials or methods.
   3. Submittals as required for substitutions.
   4. Quotations of charges or credits.

C. Submit 48-hour advance written notice to Architect (with a copy to the District Representative) designating the time Work will be uncovered.

D. Submit all materials to be used in cutting and patching in accordance with Specification Section 00 72 00.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Primary Products: Materials for replacement of Work removed are to comply with Technical Specifications and are required to match original installation.

B. Product Substitution: For any proposed change in materials, submit request for substitution in accordance with Specification Section 00 72 00.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine existing conditions prior to commencing Work, including elements subject to movement or damage during cutting and patching.

B. After uncovering existing Work, examine conditions affecting installation of new products and performance of Work.

C. Beginning of cutting or patching operations means acceptance of existing conditions.

3.02 PREPARATION

A. Provide means of shoring, bracing and temporary supports as required to maintain structural integrity of the Work.

B. Provide devices, enclosures and methods to protect adjacent surfaces and areas of the property from damage, dust or disruption.

C. Provide protection from the elements for areas, which may be exposed during cutting or patching.

D. Maintain excavations free of water.

3.03 CUTTING

A. Execute cutting, fitting and adjustment of products to permit finished installation to comply with specified tolerances and finishes.

B. Perform cutting and demolition by methods, which will prevent damage to other Work, and will provide proper surfaces to receive installation of repairs and new Work.

C. Uncover Work to install improperly sequenced Work.

D. Remove and replace defective, rejected or non-conforming Work.

E. Remove samples of installed Work for testing when requested.

F. Provide openings in the Work for penetration of Mechanical and Electrical Work.

G. Employ only experienced installers to perform cutting for weather exposed, moisture resistant and sight-exposed surfaces.

H. Cut concrete, tile plaster and other rigid materials using masonry/concrete saws and core drills. Pneumatic tools are not allowed without prior approval.

3.04 PATCHING

A. Execute patching to match adjacent Work.

B. Fit products together to integrate seamlessly with adjacent Work.

C. Execute patching by methods to avoid damage to adjacent Work, and which will provide appropriate surfaces to receive finishing Work.

D. Employ only experienced installers to perform patching for weather exposed, moisture resistant and sight-exposed surfaces.

E. Restore Work with new products in accordance with requirements of the Contract Documents.

F. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with approved fire rated material in accordance with the manufacturers installation instructions and applicable Codes.

G. Fit Work to pipes, sleeves, ducts, conduits and other penetrations through affected surfaces neatly and leave in finished condition.

H. All patched surfaces are to match adjacent finishes in all respects: Type, texture, thickness and color. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit or area.

END OF SECTION

SCUSD Abraham Lincoln
TK Classroom Additions

PROJECT MANUAL

Date:	04.24.2026
Project Number:	3186-077-000
Phase:	Progress Set
Agency Number:	DSA Appl #02-124221 / File #34-53

HMC Architects
DESIGN FOR GOOD

PROJECT MANUAL AND SPECIFICATIONS
FOR
SACRAMENTO CITY UNIFIED SCHOOL DISTRICT
SCUSD ABRAHAM LINCOLN TK CLASSROOM ADDITIONS

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SITE DEMOLITION

PART 1 – GENERAL

1.01 SUMMARY

A. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 01 50 00 - Construction Facilities and Temporary Controls.
3. Section 01 50 13 - Construction Waste Management and Disposal.
4. Section 31 00 00 - Earthwork.
5. Section 31 13 16 - Tree Protection.

1.02 REGULATORY REQUIREMENTS

A. Conform to applicable jurisdictional authority regulations and codes for disposal of debris.

B. Coordinate clearing Work with utility companies

C. Maintain emergency access ways at all times.

D. Contractor shall comply with all applicable laws and ordinances regarding hazardous materials, including contaminated soils, hazardous material transformers, and similar materials or components.

1.03 SUBMITTALS:

A. Schedule: Submit a detailed sequence of demolition and removal work, including dates for shutoff, capping, and continuance of utility services.

B. Procedures: Submit written procedures documenting the proposed methods to be used to control dust and noise.

1.04 EXISTING CONDITIONS

A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

B. Conduct demolition to minimize interference with adjacent structures or items to remain. Maintain protected egress and access at all times.

1.05 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Safety Precautions Prevent damage to existing elements identified to remain or to be salvaged, and prevent injury to the public and workmen engaged on site. Demolish roofs, walls and other building elements in such manner that demolished materials fall within foundation lines of building. Do not allow demolition debris to accumulate on site. Pull down hazardous work at end of each day; do not leave standing or hanging overnight, or over weekends.

1. Protect existing items which are not indicated to be altered. Protect utilities designated to remain from damage.
2. Protect trees, plant growth, and features designated to remain as final landscaping as shown on drawings.
3. Protect benchmarks from damage or displacement.

D. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

E. Fire Safety: The contractor shall conform to chapter 33 of the California Fire Code (CFC), "Fire Safety During Construction and Demolition", at all times during the construction process. A copy of this chapter can be provided.

F. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

G. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

H. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

I. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine conditions of work in place before beginning work, report defects.

B. Report existence of hazardous materials or unsafe structural conditions.

3.02 PREPARATION

A. Scheduling:

1. General: Coordinate and schedule demolition work as required by the Owner and as necessary to facilitate construction progress.

B. Hazardous Materials:

1. General: Identify chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations, and notify such jurisdictional agencies as may be required. Collect and legally dispose of such materials at official disposal locations away from the site.
2. Asbestos: If asbestos or materials containing asbestos are encountered, stop work immediately and contact the Owner. Do not proceed with demolition until directed by Owner.

C. Utility and Service Termination

1. Locate and identify existing utility, service and irrigation system components affected by work of this contract. Review existing record drawings, conduct site investigations, contact Underground Service Alert and other qualified cable/pipe/line locator services, and implement all other means necessary to define the location of underground systems.
2. Prior to beginning any demolition, properly disconnect all water, gas and electrical power supply at appropriate disconnect locations. Obtain all necessary releases and approvals from serving utility companies.
3. Prior to demolition or disconnect, obtain Owner's approval that such system does not impact facilities or systems beyond the extent of this contract.
4. Mark location of disconnected systems. Identify and indicate stub-out locations on Project Record Documents.

D. Verify that existing plant life and features designated to remain are tagged or identified.

1. The Architect will mark the features, trees, and shrubs to remain within the construction area. Contractor shall not commence clearing and grubbing operations until authorized by the Owner and all protective measures are in place.

E. Coordinate the time and duration of all system disconnects with Owner.

3.03 DEMOLITION

A. General Requirements

1. Clear areas required for access to site and execution of Work, including pavements, structures, foundations, vegetation, trash and debris.
2. Coordinate with Owner the time of day and route to remove demolished materials from premises.
3. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.
4. Remove all buried debris, rubble, trash, or other material not deemed suitable by the Geotechnical Engineer.
5. Fill all voids or excavations resulting from clearing, demolition, or removal of vegetation with specified fill material.
6. See list below for other site specific buildings, structures, equipment that need to be walked with District prior to demolition for items to be salvaged:
   a. TBD.

B. Fixture and Equipment Removal:

1. Remove existing fixtures and equipment as identified and shown on drawings and required by Architect.
2. Verify all service connections to fixtures and equipment designated for removal have been properly disconnected.
3. Remove all conductors from conduit at all abandoned circuits.

C. Play Equipment Removal:

1. Remove existing play equipment as identified and shown on drawings and required by Architect.
2. Coordinate salvage rights with District for individual components, fasteners, slides, etc. prior to demolition and removal from site.

3.04 UTILITY AND BUILDING SERVICES REMOVAL AND RE-INSTALLATION

A. Where crossing paths and potential points of interference with existing utility services are shown or can be reasonably inferred from surface conditions or evidence of subsurface systems, such as meter boxes, vaults, relief vents, cleanouts and similar components.

1. Review all contract documents showing crossing paths and potential points of interference.
2. Pothole or determine by other means the accurate depth and location of such utilities.
3. Incorporate all costs required to complete work under this contract, including additional trenching, re-routing of existing and new utilities, and all means necessary to construct work under this contract.

4. No additional cost to the Owner will be allowed for work necessary to accommodate utility conflicts where such crossing paths are shown on contract drawings or can be reasonably inferred from surface conditions or components.

B. Remove all conductors from conduit at all abandoned electrical circuits.

C. Seal off ends of all piping, drains and other components as directed by Architect and serving utility.

D. Where necessary to maintain service to existing utility and building systems, relocate or redirect all conduit and conductors, piping, drains, and associated system components.

1. Re-circuit all electrical as required.
2. Re-circuit all landscape irrigation valving and control systems as required.
3. Temporarily terminate landscape system components in approved boxes or with approved caps, suitable for re-connection or extension.
4. Extend or otherwise modify all site drainage systems, including catch basins, drain inlets and piping. Fine grade to maintain proper drainage flow pattern to drains.

E. Demolish structure in an orderly and careful manner.

1. Use of explosives prohibited.

3.05 SITE PAVEMENT REMOVAL

A. Remove sidewalk and curb where required for new construction as specified and as indicated on the Drawings.

1. Remove all paving by saw-cutting.
2. Remove concrete paving and curbing at locations shown on drawings. Locate closest adjacent expansion or weakened plane joint to define start of removal or saw-cutting.

B. Remove asphalt concrete paving areas where required for new construction as specified and as indicated on the Drawings.

1. Remove all paving by saw-cutting.
2. Remove paving assembly as required to expose subgrade.

3.06 LANDSCAPE AND IRRIGATION SYSTEMS DEMOLITION AND RENOVATION

A. Clearing, grubbing, and planting demolition.

1. Remove grass and grass roots to a minimum depth of two inches below existing grade.
2. Remove all shrubs, plants and other vegetation within the area of the work unless designated to remain. Grub and remove all roots of all vegetation to a depth of 24 inches below existing grade.
3. Remove only those trees which are specifically designated for removal, or as shown on the drawings, within the construction area. Remove all stumps. Remove root ball and root systems larger than 1 inch in diameter to a depth of two feet below existing or finished grades,

whichever is lower and a minimum of five feet beyond the edge of paving, structure, wall or walkway.

4. Hand cut existing tree roots over 1 inch in diameter as necessary for trenching or other new construction, apply multiple coats of emulsified asphalt sealant especially made for horticultural use on cut or damaged plant tissues to cut faces and adjacent surfaces. Cover exposed roots with wet burlap to prevent roots from dying out until backfilling is complete.
5. Disking and mixing of vegetation, trash, debris, and other deleterious materials with surface soils prior to grading is not permitted.
6. Remove all buried debris, organic material, rubble, trash, or other material not deemed suitable by the Geotechnical Engineer.
7. Fill all voids or excavations resulting from clearing, demolition, or removal of vegetation with fill material in compliance with Section 31 00 00.
8. Selected equipment of such sizes and capacities that the existing environment is disturbed as little as possible, and to afford ease of mobility within limited and relatively confined work areas. Make every effort to preserve the topography in its natural state.
9. Keep drains, catch basins, surface drainage courses and related drainage system components clear of debris and construction materials.
10. Remove irrigation piping and appurtenances as necessary within area of work, unless noted otherwise to remain. Replace irrigation piping and appurtenances to irrigate new and/or existing landscaping. Contractor shall be responsible for temporary landscape irrigation until such time that irrigation system is restored and operational.

3.07 DISPOSAL

Demolished materials become property of the Contractor and shall be removed from premises, except those items specifically listed to be retained by Owner.

A. Dispose of all demolished material, trash, debris, and other materials not used in the work in accordance with the regulations of jurisdictional authority.

B. It is recommended [EDIT OPTION required] that all materials that are of a recyclable nature, be transported to a suitable legal recycling facility instead of a dump or refuse facility (unless they are one-in-the same).

C. Burning and Burying of Materials: NOT ALLOWED.

D. Haul Routes:

1. Obtain permits as required by jurisdictional agencies. Establish haul routes in advance, post flagmen for the safety of the public and workmen.
2. Keep streets free of mud, rubbish, etc.; assume responsibility for damage resulting from hauling operations; hold Owner free of liability in connection therewith.

E. Remove demolished materials and debris from site on a daily basis.

3.08 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris.

B. Clean excess material from surface of all remaining paved surfaces and utility structures.

C. Power wash all concrete surfaces to remove stains, dried mud, tire marks, and rust spots.

END OF SECTION

SECTION 03 10 00

CONCRETE FORMING AND ACCESSORIES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Formwork for cast-in-place concrete, with shoring, bracing, and anchorage.
2. Openings for other affected work.
3. Form accessories.
4. Stripping forms.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 03 20 00 – Concrete Reinforcing.
3. Section 03 30 00 – Cast-In-Place Concrete.
4. Section 32 16 00 – Site Concrete.

1.02 REFERENCES

A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 19A.

B. ACI 301 - Specifications for Concrete Construction.

C. PS-1-95 - Construction and Industrial Plywood.

1.03 SYSTEM DESCRIPTION

A. Design, engineer, and construct formwork, shoring, and bracing to meet design and code requirements, so that resultant concrete conforms to required shapes, lines, and dimensions.

1.04 QUALITY ASSURANCE

A. Construct and erect concrete formwork in accordance with ACI 301.

B. Regulatory Requirements:

1. Conform to CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

1.05 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Plywood: PS-1-95, BB Plyform grade, Class I, Exterior classification. Supply in large sheets of adequate thickness to support the imposed loads, but in no case less than 5/8" thick. General locations and finish levels as noted:
   1. Concrete not exposed to view: APA Plyform or clean and sound 1x8 sawn lumber.
   2. Smooth Concrete exposed to view: APA Plyform.
   3. Fiber Forms: Tubular column type spirally constructed of laminated plies of fiber.
   4. Elevated Floor/Roof Slabs: At discretion of the Contractor.
   5. Extruded Polystyrene Foam: board or shaped as required.

B. Lumber: Douglas Fir species; construction grade; with grade stamp clearly visible. Forms may be used for concrete surfaces that are unexposed and require no further surface applied materials. Lumber, if used, shall be clean and sound 2x (height as required) No. 2 grade or better.

C. Form Coating: Form shall be coated with nongrain-raising and non-staining types of form coating that will not leave a residual matter on the face of the concrete or adversely affect proper bonding of any subsequent paint or other surface applications. Form coating containing mineral oils or other non-drying materials will not be permitted for any concrete work.

D. Form Ties: Snap off metal of fixed length: leaving no metal within 1-1/2 inches of surface and no fractures, spalls or other surface defects larger than one-inch diameter; manufactured by Burke, Dayton Superior, or accepted equal.

E. Spreaders: Metal (no wood permitted).

2.02 ACCESSORIES

A. Form Ties: Snap-off metal of adjustable length; cone type; 1 inch break back dimension; free of defects that will leave holes no larger than 1 inch diameter in concrete surface.

B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

C. Fillets for Chamfered Corners: Wood strips type; 3/4 x 3/4-inch size; maximum possible lengths.

D. Flashing Reglets: 26-gauge thick galvanized steel; longest possible lengths; release tape sealed slots; with alignment splines for joints; securable to concrete formwork; Type CO reglet manufactured by Fry Reglet www.fryreglet.com.

E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; of strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verity lines, levels, and measurements before proceeding with formwork.

3.02 PREPARATION

A. Obtain Architect's approval for use of earth forms for footings.

B. Minimize form joints. Symmetrically align joints and make watertight to prevent leakage of mortar.

C. Arrange and assemble formwork to permit stripping, so that concrete is not damaged during its removal.

D. Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

3.03 APPLICATION

A. Form Release Agent

1. Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.
2. Do not apply form release agent where concrete surfaces are scheduled to receive applied coverings which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.04 CONSTRUCTION

A. Build and erect forms to conform to the required shapes, patterns, lines, grades and dimensions indicated. Forms shall be substantial and tight to prevent any leakage of mortar, properly braced and tied together to maintain their position and shape. Forms shall not deflect under the dead load weight of the plastic concrete or construction loads. Joints in forming material shall be butted tightly and shall bear on solid construction. Provide tool edges where indicated. Completed form work to be checked for grade and alignment to tolerances not exceeding 1/4” in 10’-0” for top of forms and not more than 1/4” in 10’-0” for vertical face.

B. Cast-in Items: Set in formwork all new sleeves, inserts, anchors, and similar items furnished and required under the work of other sections. Brace, anchor and support cast-in-items to prevent displacements and distortions.

C. Clean forms after each use and coat with release agent as required.

D. Space clamps, ties, hangers, and other form accessories so that working capacities are not exceeded by loads imposed from concrete or concreting operations.

E. Build openings into vertical forms at regular intervals if necessary to facilitate concrete placement, and at bottoms of forms to permit cleaning and inspection.

F. Build in securely braced temporary bulkheads, keyed as required, at approved locations of construction joints.

G. Slope tie-wires downward to outside of wall.

H. During and immediately after concrete placing, tighten forms, posts, and shores. Readjust to maintain grades, levels, and camber.

A. Inserts, Embedded Parts, And Openings

1. Provide formed openings where required for work embedded in or passing through concrete.
2. Coordinate work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
3. Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

B. Earth Forms

1. Construct wood edge strips at top sides of excavations as indicated on drawings.
2. Provide forms for footings and foundation walls wherever concrete cannot be placed against solid earth.
3. Remove loose dirt and debris from form area prior to concrete placement.
4. Concrete for foundations may be placed directly into neat excavations provided the foundation trench walls are stable as determined by the Architect (Structural Engineer) subject to the approval of The Division of the State Architect.
5. When earth formed foundations are used, the minimum formwork shown on the drawings is mandatory to insure clean excavations prior to and during concrete placement.

C. Form Removal

1. Do not remove forms and bracing until concrete has sufficient strength to support its own weight and imposed loads.
2. Do not damage concrete surfaces during form removal.
3. Store reusable forms for exposed architectural concrete to prevent damage to contact surfaces.
4. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.
5. Do not remove forms until concrete has gained sufficient strength to carry its own weight and imposed loads and not displace.

3.05 CLEANING

A. Clean forms to remove foreign matter as erection proceeds.

B. Ensure that water and debris drain to exterior through clean-out ports.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Reinforcing steel bars, welded steel wire fabric fabricated steel bar or rod mats for cast-in-place concrete.
2. Support chairs, bolsters, bar supports, and spacers, for supporting reinforcement.
3. Fibrous secondary reinforcement for light weight concrete topping.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 03 10 00 – Concrete Forming and Accessories.
3. Section 03 30 00 – Cast-In-Place Concrete.
4. Section 32 16 00 – Site Concrete.

1.02 REFERENCES

A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 19A (ACI 318).

B. ACI 301 - Specifications for Concrete Construction.

C. ACI 315 (SP-66) – Guide to Presenting Reinforcing Steel Design Details.

D. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.

E. ASTM A1064-24 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

F. ASTM A1064-24- Welded Steel Wire Fabric for Concrete Reinforcement.

G. ASTM A615-24 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

H. ASTM A706-24 - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.

I. ASTM C1116-23 - Standard Specification for Fiber-Reinforced Concrete.

J. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

K. CRSI - Manual of Practice.

L. CRSI - Placing Reinforcing Bars.

1.03 QUALITY ASSURANCE

A. Perform concrete reinforcement work in accordance with CASI Manual of Standard Practice.

B. Conform to ACI 301 and ACI 315 (SP-66).

C. Conform to CBC California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Submit mill test certificates of supplied concrete reinforcing, indicating physical and chemical analysis, to testing laboratory.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Items as identified on the drawings and as otherwise specified herein.

A. Reinforcing Bars: ASTM A615-24 with Supplement S1, marked "S", Grade 60 for #4 bar and larger, Grade 60 for bars smaller than #4.

B. Welded Reinforcement: ASTM A706, Grade 60, deformed bars, unfinished.

C. Welded Steel Wire Fabric: ASTM A1064-24 plain type; coiled rolls; uncoated finish. Furnish 6x6 W2.1xW2.1 welded wire fabric in flat sheets; rolls will not be allowed.

D. Steel Wire: ASTM A1064-24, plain, cold drawn steel.

2.02 ACCESSORIES

A. Tie Wire: Minimum 16-gauge annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete including load bearing pad on bottom to prevent vapor barrier puncture. Comply with CRSI “Recommended Practice for Placing Bar Supports, Specifications and Nomenclature, Latest Edition”.

C. Chairs, Bolsters, Bar Supports, Spacers Adjacent to Architectural Concrete Surfaces: Plastic coated sized and shaped as required. Wood is not permitted as supports for reinforcing. Concrete dobies allowed at foundations and footings only.

2.03 FABRICATION

A. Fabricate in accordance with CRSI manual.

B. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of the bars for bending will not be permitted. Rebar shall not be field bent or straightened without SEOR review.

1. Spacers and chairs shall be as specified or detailed and spaced such that steel reinforcement will be carried without deflection. Chairs shall center reinforcing vertically at center of slab thickness.
2. Concrete blocks or “dobies” may be used to support bottom layer of steel in floor slabs on grade.
3. Bars shall be in long lengths with laps and splices as shown. Offset laps 8'-0" in adjacent bars. Place steel with clearances and cover as shown. Bar laps shall be as indicated on the drawings. Tie all laps and all intersections with specified wire. Maintain clear space between parallel bars not less than 1-1/2 times nominal diameter for round bars, but in no case shall clear space be less than 1-1/2", nor less than 1-1/2 times maximum size concrete aggregate.
4. Install welded wire fabric in lengths as long as possible. Lap adjoining pieces at least one full mesh and lace splices with wire ties. Offset laps of adjoining widths to prevent continuous laps in either direction.
5. Cut bars true to length with ends square and free of burrs.

B. Drawing Notes: Refer to notes on Drawings for additional reinforcement requirements.

C. Welding of reinforcing bar shall be performed only where indicated on plans and in compliance with AWS D1.4. All welding of reinforcement is to be inspected in accordance with CBC Table 1705A.2.1, Item 5(b).

D. Fabricate in accordance with ACI 315 (SP-66), providing concrete cover specified in Section 03 31 00.

E. Locate reinforcing splices not indicated on Drawings at points of minimum stress. Indicate location of splices on shop drawings.

F. Weld reinforcing bars in accordance with AWS D1.4.

G. Fusion Welding
1. Fusion welding of holding wires to ties, stirrups, and hoops in beams, columns, and grade beams to preassemble reinforcing cages is permissible. The holding wire area shall not exceed 5% of the beam, column, or grade beam cross sectional longitudinal steel

area. Fusion welding is not allowed to longitudinal reinforcing steel in any beam, column, or grade beam.

2. Fusion welding of holding wire to the ends of the reinforcing steel places in mats (spread footings, slab reinforcement, etc.) is permitted provided the fusion weld occurs within 6 bar diameters of the free end of the bar (e.g. not allowed at the end of coupled, T-headed, or weld splice bars.)
3. Fusion welding of holding wires shall not occur on a bent portion of a reinforcing bar. Bars may not be bent where a fusion weld occurs.
4. Holding wires shall conform to ASTM A496.
5. All reinforcing steel to be welded shall comply with ASTM A706.
6. Submit complete structural plans indicating which members will use fusion welding process for assembly. Provide complete structural details indicating the size of stirrups and holding wires and welding requirement. Submit a complete shop welding program which includes the following:
   a. Type of the specific fusion welding machine.
7. Periodic inspection protocol of the in-plant welding. This information shall be submitted to the Structural Engineer (SEOR) and the Owner's Testing Agency for approval. Fusion welding and fabrication is not permitted until approved by the SEOR.

2.04 SOURCE QUALITY CONTROL AND TESTING

A. Source Quality Control and Testing will be performed under provisions of Section 01 45 00 and as required by the Division of the State Architect and District Inspector.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Before placing concrete, clean reinforcement of foreign particles or coatings.

B. Place, support, and secure reinforcement against displacement. Do not deviate from alignment or measurement.

C. Mix fibrous reinforcement into concrete material according to Section 03 30 00.

D. Do not displace or damage vapor barrier required by Section 03 30 00. Protect rebar in place from damage from other trades. Protect rebar from rusting from exposure to the elements.

3.02 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01 45 00 and as required by the Division of the State Architect and District Inspector.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:

1. Concrete Formwork.
2. Reinforcement of Concrete.
3. Concrete Placing and Finishing.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 03 10 00: Concrete Forming and Accessories.
3. Section 03 20 00: Concrete Reinforcing.
4. Section 03 35 45: Concrete Finishing – Polished Concrete.
5. Section 06 10 00: Rough Carpentry.
6. Section 07 26 00: Vapor Retarders.
7. Section 09 65 00: Resilient Flooring – Vinyl Composition Tile (for floor flatness requirements).
8. Section 09 65 19: Resilient Flooring – Sheet Vinyl (for floor flatness requirements).
9. Section 09 68 13: Carpeting (for floor flatness requirements).
10. Section 32 16 00: Site Concrete.

1.02 REFERENCES

A. CBC - California Building Code, (CCR) California Code of Regulations Title 24, Part 2, Chapter 19A.

B. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.

C. ACI 117-10 - Specification for Tolerances for Concrete Construction and Materials.

D. ACI 211.1-91 - Standard Practice for Selecting Proportions for Normal Weight, Heavy Weight and Mass Concrete.

E. ACI 301-16 - Specifications for Structural Concrete for Buildings.

F. ACI 302.1R-15 - Guide to Concrete Floor and Slab Construction.

G. ACI 304R-00 - Guide for Measuring, Mixing, Transporting and Placing Concrete.

H. ACI 305R-10 - Hot Weather Concreting.

I. ACI 306R-16 - Cold Weather Concreting.

J. ACI 308-16 - Standard Practice for Curing Concrete.

K. ACI 309R-05 - Guide for Consolidation of Concrete.

L. ACI 318-14 - Building Code Requirements for Structural Concrete.

M. ASTM A615-24 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

N. ASTM C33-24a - Concrete Aggregates.

O. ASTM C94-25 - Ready-Mixed Concrete.

P. ASTM C114-24 - Methods of Chemical Analysis of Hydraulic Cement.

Q. ASTM C150-24 - Portland Cement.

R. ASTM C260-24 - Air Entraining Admixtures.

S. ASTM C289-07 - Standard Test Method for Potential Alkali-Silica Reactivity.

T. ASTM C309-19 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

U. ASTM C330-23 - Standard Specification for Lightweight Aggregates for Structural Concrete.

V. ASTM C494-024 - Chemical Admixtures for Concrete.

W. ASTM C567-19 - Standard Test Method for Determining Density of Structural Lightweight Concrete.

X. ASTM C595-25 - Standard Specification for Blended Hydraulic Cements.

Y ASTM C618-25a - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

Z. ASTM C932-06(2024) - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering.

AA. ASTM C989-25 - Standard Specification for Slag Cement for Use in Concrete and Mortars

BB. ASTM C1315-25 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

CC. ASTM C1602-22 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete

DD. ASTM D226-22 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

EE. ASTM D1751-23 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

FF. ASTM E96-24a - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

GG. ASTM E1155-23 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.

HH. ASTM E1155-23 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.

II. ASTM E1643-24 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

JJ. ASTM E1745-17(2023) - Standard Specifications for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.

KK ASTM F710-22 - Standard Practice for Preparing Concrete Floor to Receive Resilient Flooring.

LL. ASTM F1869-23 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

MM.National Ready Mix Concrete Association - Plant Certification Program.

1.03 QUALITY ASSURANCE

A. All Concrete for the project shall be controlled concrete of specified strengths, of uniform color, and free from defects liable to adversely affect strength, durability or appearance of the structure or its components.

B. Requirements of Regulatory Agencies: The quality and design of structural concrete shall comply with the requirements of the California Building Code, except where more stringent requirements are specified.

C. Workmanship: Materials and methods used for the production and placement of concrete shall be such as to assure the specified quality and shall conform to applicable requirements of the Building Code for Reinforced Concrete (ACI 318) of the American Concrete Institute, except as otherwise specified in this Section.

1. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement at no expense to the Owner.
2. Proper installation of partitions and equipment requires the floor finish to be level and smooth throughout. Extreme care shall be exercised during all floating and troweling operations to check levels often.
3. Any concrete work which does not comply with tolerances and elevations shown on drawings will be cause for rejection of all work affected, and, if so rejected, such work shall be removed and replaced at no increase in cost to the Owner.

D. Removal and replacement of Defective Concrete Surfaces shall be done in the following manner when, in the opinion of the Architect, such defects may be removed and replaced at no additional cost to the Owner.

1. Rock pockets, voids, spalls, cracks (superficial and structural) and exposed reinforcing shall be removed and replaced.
2. Floor surfaces which exceed the allowable variation in plane or level as specified herein shall be ground, filled, or replaced to obtain the level and plane required. Fill materials, where required, shall be of type approved by the Architect.
3. Surfaces which are not plumb and square, or which do not conform to the lines and levels indicated shall be removed and replaced.

E. Uniformity of Concrete: All aggregates shall be measured by weight and the proportion of water to cement shall be accurately controlled by either automatic measuring devices or calibrated containers. All concrete placed shall be uniform strength and color appearance as well as surface texture.

F. Screeds shall be provided at all construction joints as required to ensure installation of concrete to lines and elevations noted.

G. Ready-Mixed Concrete: ASTM C94-25 except as otherwise specified herein. Mix and deliver in accordance with the requirements set forth in ASTM C94 and ACI 301. Continuous Batch Plant inspection is required per CBC Section 1705A.3.3. Contractor may request waiver of batch plant inspection in accordance with CBC Section 1705A.3.3.1 provided the following is met:

1. Approved Testing Laboratory shall check the first batching for each class of concrete and furnish mix proportions to the Licensed Weighmaster.
2. Licensed Weighmaster to positively identify materials as to quantity and to certify to each load by ticket.
3. Ticket shall be transmitted to Project Inspector by truck driver with load identified thereon. Project Inspector will not accept load without load ticket identifying mix and will keep daily record of pours, identifying each truck, its load and time of receipt and will transmit two copies of record to the Division of the State Architect (DSA).
4. Do not add water at the site to concrete mixes with a maximum specified WCR unless the water content at batch time provides for a WCR less than specified and this provision, including the quantity of water which may be added at the site, is specifically noted on the Mix Design and Certification by the mix preparer.

5. At end of project, Weighmaster shall furnish affidavit to DSA on form satisfactory to DSA, certifying that all concrete furnished conforms in every particular and to proportions established by mix designs.

H. Concrete Preplacement Inspection: Concrete shall not be poured until the forms, reinforcement, and preparations are complete and have been reviewed by the Project Inspector.

I. Tests: For structural concrete, the Testing Lab shall take four (4) test cylinders of concrete each day for every 50 cubic yards of concrete or fraction thereof being placed. Cylinders shall be made and stored as per instructions given by the testing laboratory and shall be in accordance with ASTM Specifications C31-25b and C39-24. Cylinders shall be tested for ultimate compressive strength of concrete with one cylinder tested at the age of 7 days and two (from the same batch) to be tested at the age of 28 days, with one cylinder held as a spare for future testing if needed. Tests shall be made by a recognized test laboratory selected by the Owner and approved by the Architect.

1. Cylinders not meeting the required design stresses shall indicate defective concrete and such concrete shall be removed and replaced at no increase in cost to the Owner. Core tests requested by the Contractor to establish design stresses, when cylinder tests indicate defective concrete, shall be paid for by the Contractor.
2. Batch plant inspection as required by the DSA Structural Tests and Inspections Form SSS 103-1.

J. Floor Flatness: Provide certification of floor slab flatness per the requirements of Part 3 below.

K. Preinstallation Meetings.

1. Preinstallation Conference: Conduct conference at Project site.
   a. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
      1) Contractor's superintendent.
      2) Independent testing agency responsible for concrete design mixtures.
      3) Ready-mix concrete manufacturer.
      4) Concrete Subcontractor.
      5) Special concrete finish Subcontractor.
      6) Inspector.
      7) Owner’s Representative.
      8) Architect.

   b. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, methods for achieving specified floor and slab flatness and levelness, floor and slab flatness and levelness measurement, and concrete protection.
   c. Sign-in sheet shall be provided at time of meeting to document attendees.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Manufacturer's Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, chemical floor hardeners, and others as may be requested by the Architect.

C. Shop Drawings: Shop drawings sheet size shall be 24" x 30" minimum.

1. Reinforcing Steel: The correctness of the bending diagrams is the responsibility of the Contractor. Identify such shop drawings with a reference thereon to sheet and detail numbers from the contract drawings. No reinforcing steel shall be fabricated without approved shop drawings.
2. Construction joint layout per Part 3 below. Contractor to submit plan based upon design team's layout as shown on drawings. Provide verification that the joint layout will limit the risk of slab cracking. Plans shall include control, and expansion joints.

D. Concrete Mix Design: Submit proposed mix design prepared by concrete supplier. Mix design must be submitted to Owner for review and acceptance by a recognized independent testing lab, for all structural concrete.

E. Historical test data on all proposed mix designs including 28-day strength reports, and verification of aggregate and concrete shrinkage.

F. Test reports for Floor Flatness and Floor Levelness shall be submitted for review after first slab has been poured and prior to subsequent slabs being poured.

1.05 JOB CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required by construction activities.

PART 2 – PRODUCTS

2.01 CONCRETE MATERIALS

A. Portland Cement: ASTM C150-24, Type II, low alkali, Type II/V, Type V, ASTM C595 Type 1L. All cement used shall be of one manufacturer. Other blended mix designs are not acceptable.

1. Use Type IIA cement if pumping of concrete is selected and permitted for placing of concrete.
2. All cement shall contain not more than 0.6 percent total alkali when calculated as sodium oxide as determined by "Methods of Chemical Analysis of Hydraulic Cement", ASTM C114-24.

B. Blended Cement: ASTM C595-25, Type IL (MS or (HS).

1. All cement shall not contain more than 0.6 percent total alkali when calculated as sodium oxide as determined by "Methods of Chemical Analysis of Hydraulic Cement", ASTM C114-24.

C. Supplementary Cementitious Materials:

1. ASTM C618-25a Class N or Class F materials (Class C is not permitted).
2. ASTM C989-125 Ground Granulated Blast Furnace Slag.

D. Water: ASTM C1602-22 Clean and free from deleterious amounts of acids, alkalis, salts and organic matter.

E. Concrete Aggregates: ASTM C33-08 except as otherwise specified hereinafter. All aggregates shall be nonreactive and nondegenerative, and shall consist of sound crushed rock, washed gravel, or a combination of both.

1. Aggregate size for structural slabs shall be 1-1/2 inch. Aggregate size for other structural concrete shall be between 3/4 inch and 1-1/2-inch maximum.
2. Aggregate shall be saturated surface dry by batch plant.
3. Modify fine aggregates when air entrained concrete is used in accordance with Paragraph 4.2.4 of ASTM C33-08.
4. Aggregate shall result in shrinkage of concrete not exceeding .048 percent at 28 days. Testing lab shall verify aggregate and concrete shrinkage.
5. Do not use fine or coarse aggregates that contain substances that are known to cause spalling or adverse reactions in the concrete.

F. Cementitious Materials:

1. Fly Ash: 40 percent replacement maximum.
2. Slag Cement: 50 percent maximum.
3. Combined Fly Ash and Slag Cement: 50 percent replacement maximum.

E. Air Entraining Agents shall be used in concrete at the contractor's option. The maximum entrained air content shall be no more than 4 percent + 1 percent by volume. Sika AER, Master Builders Micro Air, Darex AEA, Protex AEA or approved equal meeting ASTM C260-24.

F. Admixtures: Except for air entraining agents, and water-reducing admixtures, no other admixtures shall be used without written approval from the Architect. Where such agents are permitted, they shall be a type approved and used only as directed by the Architect and at no increase in cost to the Owner.

1. Calcium chloride will <u>not</u> be permitted for use in concrete under any circumstances.
2. Air Entraining Agents: ASTM C260. Use where specified. The maximum entrained air content shall be no more than 4 percent + 1 percent by volume unless noted otherwise. Approved air entraining agents are Sika AER, Master Builders Micro Air, Darex AEA, Protex AEA or approved equal.
3. Water Reducing Admixtures: ASTM C494-24 Type A, D, E, F, or G and ACI 318, Section 3.6. Use where specified.
4. *Or as otherwise required by project conditions.*

2.02 CRUSHED ROCK BASE:

A. Under all new concrete ramps and paving, or as otherwise indicated on the Drawings, provide a minimum of 4 inches of crushed rock fill. Crushed rock fill shall be clean gravel of 1” max. size and have no material passing through a No. 4 sieve.

2.03 JOINT MATERIAL:

A. Provide 3/8” wide fiber expansion joint material, Model No. 320-F, as manufactured by W.R. Meadows or approved equal.

B. Provide Snap-Cap as manufactured by W.R. Meadows or approved equal. Snap-Cap shall have a top plastic edge that can be used for leveling concrete. Once concrete has set up, top edge of Snap-Cap can be pulled free and discarded. Joint shall then be sealed.

C. Joint sealing material shall be a two-component, self-leveling, polyurethane elastomeric sealant. Product shall be Sikaflex 2cSL as manufactured Sika Corporation, or equal. Color shall be chosen by Architect from the full range of manufacturer’s standard colors.

2.04 RELATED MATERIALS

A. Concrete Adhesive and Bonding Agent: "Concresive #1001-LPL" (1-1/2-hour maximum pot life), an epoxy polysulfide type concrete adhesive as manufactured by Master Builders or approved equal.

B. Liquid Curing Compound: W.R. Meadows, Product: "Vocomp-20" or approved equal.

C. Bonding Adhesive: White Cap Glue, Burke Bondcrete-S or approved equal; use as a modifier for patching and overlays up to 1/2" thick or approved equal.

D. Doweling Epoxy: Hilti “HIT-RE 500” (ICC-ES ESR-3814), Simpson Strong-Tie “SET-3G” Epoxy (ICC-ES ESR-4057) or approved equal.

1. Anchor rods shall be furnished with a 45-degree chisel point on one end to allow for easy insertion into adhesive filled hole and manufactured to meet the requirements of ASTM A36. Nuts and washers shall be furnished to meet the requirements of the anchor rod specifications noted above.
2. Install per manufacturer’s recommendation; use stainless steel for all exterior work.
3. Testing required as noted in the Structural Drawings.

E. Vapor Barrier: Stego Wrap, 15 mil. vapor barrier system, with a Class A rating, and perm rating not to exceed 0.01 perms; by Stego Industries of San Juan Capistrano, CA (877) 464-7834, VaporGuard by Reef Industries (713) 507-4250., Sundance 15 mil Vapor Barrier by Sundance Inc. (855) 300-7156, or 15 mil Husky, Yellow Guard, Vapor Barrier by Poly-America (800) 527-3322. No other substitutions will be accepted. System to include Stego Mastic, Stego “Crete Claw Tape” and pipe boots, or approved equal by the specified manufacturers. Conform to ASTM 1745.

F. Patching Mortar: Meadow-Crete GPS, one-component, trowel applied, polymer enhanced, shrinkage-compensated, fiber reinforced, cementitious repair mortar for horizontal, vertical and overhead applications as manufactured by W.R. Meadows or approved equal.

G. Non-shrink Grout: Masterflow 713 Plus by Master Builders or approved equal. Premixed, non-metallic, no chlorides, non-staining, and non-shrinking per CRD-C621, Corps of Engineers Specification and ASTM C 1107, Grades B and C.

2.05 CONCRETE DESIGN

A. The concrete mix shall be proportioned to produce a minimum ultimate compressive strength at 28 days of 3,000 psi for structural concrete and 3,000 psi for all other concrete (Section 32 13 00) unless otherwise noted.

Note to designer…While 3,000 psi is the District standard for all structural concrete, designer may modify if required to suite project specific structural design conditions.

1. Laboratory Mix Design: Concrete designs, using Methods B or C, Section 1905.1.1 of the CBC, Title 24, shall be reviewed by the Testing Laboratory. The concrete mix designs reviewed by the Testing Laboratory and approved by the Project Architect or Structural Engineer shall be used by the Contractor. Contractor shall provide samples of aggregates as required by the laboratory to review the mix designs. Laboratory shall also include shrinkage tests.
2. Water Reducing Admixture: All concrete shall contain a water reducing admixture.
3. Air Entraining Agent: Include in all concrete in all exterior concrete to result in concrete at point of placement having an air entrainment of 4% (+/- 1%).
4. Maximum water - cement ratio at point of placement: 0.45.

B. Ready-Mixed Concrete: ASTM C94-25 except as otherwise specified herein.

1. Transit-mixed concrete shall be mixed for a period of not less than 10 minutes at a peripheral drum speed of approximately 200 feet per minute, and mixing shall be continued until discharge is complete. At least 3 minutes of the mixing period shall be at the job. Transit mixers shall be equipped with water measuring devices consisting of either accurately calibrated water tanks or water meters.
2. When outside air temperature is between 85 degrees and 90 degrees, reduce mixing and delivery time from 90 minutes to 75 minutes. When outside air temperature is above 90 degrees, reduce mixing and delivery time to 60 minutes.

C. Job Mixing: The capacity of the mixer shall be such that it will handle one or more full sack batches. No split sack batches will be permitted except when all materials are weighed. The rated capacity of the mixer shall not be exceeded. The mixing drum shall be equipped with an automatic timing and locking device and with an accurate water gauge for measuring the amount of water used. Mixing time of each batch shall be at least 1-1/2 minutes after all ingredients are in the mixer.

D. Slump of Concrete: The slump of concrete as determined by the Standard Test Method for Slump of Hydraulic Cement Concrete ASTM Designation C-143-20 shall be as follows:

1. All Concrete: 4 inches maximum, plus/minus 1 inch (5 inch maximum).

PART 3 – EXECUTION

3.01 CONCRETE PLACEMENT

A. Surrounding Conditions: Before any concrete is placed, the following items of work shall have been completed in the area of placing.

1. Forms shall have been erected, braced, cleaned, sealed, lubricated if required, and bulkheaded where placing is to stop.
   a. Any wood forms other than plywood shall be thoroughly water soaked before placing any concrete. The wetting of forms shall be started at least 12 hours before concreting.

2. Reinforcing steel shall have been placed, tied, supported, and, at time concrete is placed around it, shall be cleaned of rust, scale, mill scale or other coatings that will destroy or reduce bond.
3. Embedded work of all trades shall be in place in the forms, tied and braced.
4. The entire place of deposit shall have been cleaned of dirt, chips, sawdust, rubbish, debris, hardened concrete, and other foreign matter before concrete is deposited therein. No wooden ties nor blocking shall be left in concrete except where indicated for attachment of other work.
5. Concrete surfaces to which fresh concrete is to be bonded shall be roughened as indicated. Surfaces shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.

B. Conveying Concrete from mixer to forms shall be as rapid as possible.

1. Ready-mixed concrete shall be mixed and delivered in accordance with ASTM C94 /-25. A delivery ticket shall be furnished for each load of ready-mix or transit-mix concrete. A copy of each delivery ticket shall be handed to the job superintendent at the time of delivery and unloading. A record copy of the delivery tickets shall be forwarded to the Architect for their files.
2. Conveying equipment shall be of a sufficient capacity to ensure a continuous flow of concrete to the placing point without separation or loss of materials. Carts and buggies shall be equipped with pneumatic tires. Runway supports shall not bear on reinforcing or fresh concrete. All conveying equipment shall be thoroughly cleaned before beginning and at frequent intervals during the placing of the concrete.
   a. Chutes, if employed, shall slope not less than 4" or more than 6" per foot of horizontal run.

3. Exercise care not to spill concrete on forms & reinforcing steel during the conveying operations. Where such spillage or splattering occurs, the surfaces shall be thoroughly cleaned before concrete hardens.

C. Placing Concrete: Notify the Architect 48 hours in advance of beginning of pouring operations. Under no circumstances shall concrete that has partially hardened be deposited on the work. No concrete shall be placed during rainy weather without the Architect's approval.

1. The Project Inspector shall keep a record on the site of the time and date of placing the concrete in each portion of the structure in accordance with CBC Section 1705A.3.6. The record shall be kept until the completion of the structure and a copy provided to the Architect and DSA.

2. Before starting new pour on or against concrete that has hardened, forms shall be retightened, and the hardened concrete roughened and thoroughly cleaned of foreign matter and any laitance by sandblasting. Just ahead of the new pour, slush joints with a 2" layer of grout of the designated concrete mix minus 50 percent of the large aggregate.

3. Reinforcing steel exposed to the sun shall be cooled by a water spray prior to the placing of concrete.

4. No adjustment of steel reinforcement will be permitted during the placement of concrete.

5. Concrete shall be scheduled so that the placing is a continuous operation for the completion of each section between predetermined construction joints. If a planned concreting operation cannot be carried on continuously, the concreting shall stop at temporary bulkheads. Locate where resulting construction joints shall be as shown on the Drawings or as approved by the Architect. Prior to placing of concrete for any concrete slabs, the moisture content of the subgrade below the slabs shall be adjusted to at least optimum moisture.

6. Deposit the concrete in forms as nearly as practicable in its final position to avoid flowing and maintain until completion of the unit an approximate horizontal plastic surface. Thoroughly compact all concrete during placing operations, thoroughly around reinforcement, embedded fixtures, or accessories, and into the corners of forms to eliminate air pockets and honeycombing. Compacting shall be done with mechanical vibrators. Vibrators shall not be used to cause concrete to flow horizontally. Thoroughly compact concrete to the forms to release the air and secure full contact of the concrete with the forms.

7. Hot Weather Concreting: Concrete placing and finishing operations during hot weather shall be done as quickly as possible. Ample personnel shall be available to manage and place the concrete immediately after its mixing or delivery to the site of the work. Concrete shall be placed in layers thin enough and over areas small enough to ensure complete bond and union of adjacent layers, and thus prevent "cold joints".
   a. At air temperature of 80 degrees Fahrenheit or above, the following precautions should be taken:
      1) In no case shall the temperature of the concrete exceed 90 degrees Fahrenheit when placed in the work.
      2) If necessary, to produce and maintain concrete at an acceptable temperature, chopped or crushed ice shall be added directly into the mixer up to 50 percent by weight of the mixing water used, the weight of the ice being included in batch weight of the mixing water. The ice shall be added at such a rate and in such a manner that it will be completely melted by the time concrete is mixed.
      3) Stockpiled aggregates shall be saturated and kept surface moist by continuous fog spray or by intermittent sprinkling.
      4) Forms, reinforcements, and subgrade surfaces shall be wet down immediately before concrete is placed in contact therewith. Remove all excess water before placing concrete. Wetting down of areas around the work to cool the surrounding air and increase the humidity is recommended.

8. Cold Weather Requirements: Do not place concrete when ambient temperature is below 40 degrees Fahrenheit and falling.

3.02 CONCRETE FINISHING

A. All Concrete Work, except as otherwise specified, shall be of a quality that will present a finished appearance upon the stripping of the forms. Only a minimum of patching and finishing should be necessary as required to fill holes left by form ties and to remove any fins or minor irregularities left by the joints in the forms. Except as otherwise specified, all concrete surfaces shall be finished as follows:

B. Float finish: Begin float finish when bleed water sheen has disappeared, and the 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 within a tolerance as specified in 3.04-C. Cut down high spots and fill low spots. Refloat surface immediately to a uniform granular surface.

1. Final Finish: Provide a medium textured broom finish for all exterior surfaces by drawing a soft bristle broom across concrete surface perpendicular to line of traffic to provide a uniform fine line texture finish.
2. No magnesium bull floats allowed on non-air entrained concrete.

C. Floor Flatness and Floor Level Tolerances for slab on grade:

1. An independent testing agency will inspect finished slabs for compliance with specified tolerances.
2. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values at slabs on grade and shored slabs:
   a. Exposed to View and Foot Traffic: F(F) of 35; F(L) of 25.
   b. Under Thick-Bed Tile: F(F) of 20; F(L) of 15.
   c. Under Carpeting: F(F) of 25; F(L) of 20.
   d. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25.
3. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155 (ASTM E1155M-23), within 72 hours after slab installation; report both composite overall values and local values for each measured section.
4. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.
5. Correct defects by grinding, floating with leveling compound, or by removal and replacement of the defective work. Areas requiring corrective work to be identified by Contractor and a repair/replacement plan shall be submitted for review by Architect. Re-measure corrected areas by the same process.

D. Curb Finishing: Steel trowel as described for slab finishing above.

E. Final Tooling: Tool edges of paving, gutters, curbs, and joints formed in fresh concrete with a jointing tool to a radius of 1/4”. Repeat tooling of edges and joints after applying surface finishes. Eliminate tools marks on all concrete surfaces.

F. Form removal requirements – see SS 03 10 00.

3.03 CONSTRUCTION JOINTS

A. NO SOFTCUT (SAWCUT) CONTROL JOINTS ALLOWED.

B. Construct contraction, construction, and isolation joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline unless otherwise indicated.

C. Joints at Existing Concrete: All joints between existing concrete and new concrete or at sawcut locations through existing slabs are to include dowels at a minimum of #4 bars @ 4’-0” on center, 18” maximum from the ends, epoxy set into existing concrete a minimum of 6” in length at the centerline of existing concrete slab.

D. Contraction Joints (Control Joints): Provide weakened-plane contraction joints, sectioning concrete into areas indicated. Construct contraction joints for a depth equal to at least 1/4 of the concrete thickness unless otherwise noted on drawings. Form in fresh concrete by grooving and finishing each edge of joint with a radiused jointer tool. Joints shall be formed as soon as concrete can support operator and equipment and no more than 4 hours after concrete placement. **Joints to be spaced at 10' on center maximum or as shown on the drawings.**

E. Construction Joints: Set construction joints at side and end terminations of concrete placement and at locations where placement operations are stopped for more than 1/2 hour unless placement ends at isolation joints.

1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys. Use Burke "Keyed Kold Joint Header Form" or approved equal. Embed keys at least 1 1/2" into concrete.
2. Provide slip dowels across construction joints.

F. Isolation Joints (Expansion Joints): Form isolation joints of performed joint filler strips abutting concrete curbs, catch basin, utility access holes, inlets, structures, walks, other fixed objects, and where indicated.

1. Extend joint fillers full width and depth of joint, not less than 1/2" or more than 1" below finished surface where a joint sealant is indicated. Place top of removable joint filler flush with finished concrete surface.
2. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary, removable performed cap.
3. After concrete has cured, remove cap exposing top edge of fiber joint filler, and apply joint sealant.

3.04 PUMPING OF CONCRETE (may be permitted for concrete, providing):

A. The Contractor engages a testing laboratory to design concrete mixes for pumping. Trial batches shall be made and tested as required hereinbefore for typical concrete.

B. The quality and proportioning of aggregates for pumping conditions shall be determined in accordance with ACI, Recommended Practice 613. Aggregate proportioning must be tailored to the pump intended for use.

C. When starting a pump operation, actual pumping of concrete shall be preceded by a mortar mix (concrete without coarse aggregate) for the purpose of lubrication.

D. All mortar and concrete leakage resulting from pumping operations shall be removed from formwork, reinforcing steel and any finished surface.

3.05 CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperature. Comply with the recommendations of ACI 306R for cold weather protection and ACI 305R for hot weather protection during curing.

B. Evaporation control is to be implemented in hot, dry and windy weather by protecting concrete from rapid moisture loss before and during finishing operations with an evaporation control

material. Apply in accordance with manufacturer's instructions after screeding and bull floating, but not before floating.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination.

1. For moisture-curing, keep surfaces continuously moist for not less than 7 days with water, a continuous water-fog spray, or absorptive cover kept wet continuously wet.
2. For moisture-retaining-cover, cover concrete with moisture retaining cover with side and end laps sealed.
3. For curing compound, apply in accordance with manufacturer's instructions. Recoat areas subjected to rainfall within 3-hours after initial application.

3.06 CLEANING AND PROTECTION

A. Clean all surfaces and leave in satisfactory condition to receive final finish surface treatment.

B. Protect concrete surfaces from damage by tools, equipment, material, and workers. No traffic, shoring or other loading will be permitted until concrete has hardened sufficiently to prevent injury to finish and strength, but at least 14 days.

1. Remove surface stains and spillage of materials as they occur.
2. Sweep concrete and wash free of stains, discolorations, dirt, and other foreign material prior to final inspection.

3.07 INSPECTION

A. Approval of reinforcing steel, after installation, must be received from Project Inspector. Architect, Structural Engineer, and DSA must be notified 48 hours in advance of beginning concrete placement operations. Inspection of welding will be done by laboratory.

B. There will be initial or preliminary inspection of the finished concrete slabs by the Project Inspector and/or Architect for overall finish.

C. Slabs shall be measured for FF and FL as required by 3.02-C and findings submitted to Architect.

D. New pours will be reviewed for cracks. If during this inspection, cracked sections are found and determined unacceptable by the District, that section should be removed and replaced.

E. Final concrete inspection: Prior to occupancy, concrete will be reviewed by Owner and Architect. If any cracks, spalls, exposed finish layer seperation, etc. are identified, that section(s) shall be removed and replaced.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Description of requirements for materials, fabrications and installation of rough carpentry and associated items (except that which is specified elsewhere) indicated on Drawings and necessary to complete the work. Items include, but are not necessarily limited to, the following:
   a. Blocking, Backing, Stripping, Furring, and Nailers.
   b. Rough Hardware.
   c. Wood Framing.
   d. Plywood Sheathing.
   e. Preservative Treatment.
   f. Metal Fabrications.

B. Related Sections

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 03 30 00: Cast-in-Place Concrete.
3. Section 05 50 00: Metal Fabrications.
4. Section 06 17 00: Shop-Fabricated Structural Wood.
5. Section 06 20 00: Finish Carpentry.

C. References

1. Chapter 23, California Building Code (CBC), 2025, as adopted by the California Division of the State Architect (DSA).
2. American Society for Testing and Materials (ASTM).
3. Lumber: West Coast Lumber Inspection Bureau (WCLIB), Rule 17, Standard Grading Rules for West Coast Lumber.
4. Lumber: Western Wood Products Association (WWPA); Western Lumber Grading Rules.
5. Plywood: American Plywood Association (APA) Plywood Specifications and Grades and Voluntary Product Standard DOC PS 1 “Construction and Industrial Plywood”.
6. Wood Preservative: American Wood Protection Association (AWPA), Standard U1.
7. AWC NDS – National Design Specification for Wood Construction.
8. AWC SDPWS – Special Design Provisions for Wind and Seismic.

1.02 QUALITY ASSURANCE

A. Manufacturer data: Submit product data for all materials specified under this section and as applicable to each site.

B. Coordinate the work of all trades to ensure proper placement of all materials, anchors, etc., as well as providing for openings and anchors for the installation of surface mounted materials and equipment.

C. Qualifications of Workmen: Provide sufficient skilled workmen and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.

D. Rejection: In the acceptance or rejection of rough carpentry, no allowance will be made for lack of skill on the part of the workmen.

E. Design Criteria: Pressure treatment shall not adversely affect application, permanence, or appearance of finish paint system.

1.03 SUBMITTALS

A. Submit per the requirements of the General Conditions.

B. Certification:

1. Pressure Treated Wood: Certification for water-borne preservative that moisture content was reduced to 19% maximum, after treatment.
2. Pressure Treated Wood: Submit certification by treating plant stating the chemicals and process used, net amount of salts retained, and conformance with applicable standards.

1.04 JOB CONDITIONS

A. Environmental Requirements: Maintain uniform moisture content of lumber at 19 percent or less prior to close-in.

B. Sequencing: Coordinate details with other work supporting, adjoining, or fastening to rough carpentry work.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protection, General: Protect wood from moisture while being stored and while work is in progress.

B. Protection:

1. After delivery, store all materials in such a manner as to ensure proper ventilation and drainage and to protect against damage and the weather.

2. Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged, and separately store to prevent its inadvertent use. Do not allow installation of damaged or otherwise non-complying material.
3. Use all means necessary to protect the installed work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Wood:

1. Lumber (Blocking, Backing, Stripping, Furring, and Nailers): WCLIB Construction.
2. Lumber (Wood Framing): Meet requirements of following minimum grades, and as noted on Structural Drawings.

Item	Species	Grade	Reference
Studs	D.F.	No. 1	WCLIB 121
Plates	D.F.	No. 1	WCLIB 123b
Beams	D.F.	Select Structural	WCLIB 130b
Joists	D.F.	No. 1	WCLIB 123b
Posts	D.F.	Select Structural	WCLIB 131b

3. 3x and larger lumber shall be free of heart center.
4. 2x6 T & G Douglas Fir No. 1.

B. Plywood:

1. Roof and Wall Structural Sheathing: PS-1 Structural 1, CDX APA with exterior glue.
2. Thickness and type shall be as indicated on Drawings.

C. Pressure-Treated Lumber:

1. Douglas Fir, pressure treated.
   a. Required for cast-in-nailers, sills or anywhere wood is in contact with concrete, masonry, or grout.
   b. Required for all rooftop blocking.

D. Building Paper: Fed. Spec. UU-B-790a, Type I, Grade B (15 lb. min.).

E. Preservative Treatment

1. Furnish pressure treated Douglas Fir in accordance with AWPA, Standard U1. Each piece is required to bear AWPA stamp.

2. Field treat cut edges and holes frilled in factory treated lumber with an approved AWPA Standard U1 preservative product.
3. For fastener requirements, see Paragraph 2.01-F-8.

F. Rough Hardware Fastenings and Connections: All types including bolts, lag screws, nails, spikes, screws, washers, framing devices and other rough hardware, or kinds that may be purchased and that require no further fabrication, shall be furnished, and installed for all finish and rough carpentry. All exterior hardware shall be hot-dipped galvanized per ASTM A123-24 Standards.

1. Nails: ASTM F1667 Common wire nails or spikes; box nails not permitted.
2. Wood Screws: Wood Screws: ANSI Standard B18.6.1; use galvanized type for exterior work.
3. Lag Screws: Conform to ASTM A307-21 and ANSI Standard B18.2.1. Dimensions and installation shall conform to requirements described in the National Design Specification (NDS), current edition.
4. Bolts: ASTM A307-21, Grade A, hexagonal heads, unless noted otherwise.
5. Washers: Washers for bearing against wood shall be provided under all bolt heads and nuts. Washers shall be as indicated on Drawings.
6. Powder Driven Fasteners: Tempered steel pins with special corrosive-resistant plating or coating. Pins shall have guide washers to accurately control penetration, minimum 1-1/8 inch. Fastening shall be accomplished by low-velocity pistol-driven powder activated tool. Pins and tool shall be as manufactured by Hilti Fastening Systems; Impex Tool Corporation; or approved equal. ICBO approved.
7. Fabricated Sheet Metal Timber Framing Connectors: CBC approved. Fabricate from hot-dipped galvanized steel. Connectors shall be at least 18 gauge minimum material (1/8" plate materials where welded, unless otherwise noted), punched for nailing. Nails and Nailing shall conform to the manufacturer's instructions with a nail provided for each punched hole. Types as noted on Drawings, manufactured by Simpson Co. or approved substitute. All framing connectors shall be stamped with manufacturer's logo, and model designation.
8. All fasteners into preservative-treated and fire-retardant-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper per CBC 2304.10.5. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of zinc coated steel with coating weights in accordance with ASTM B695, Class 55 minimum.

G. Exterior Trim and Fascia: RIS Grade Stamped, Redwood, B Heart, Vertical Grain, Kiln Dried, surfaced sizes as indicated on the drawings.

2.02 FABRICATION

A. Lumber:

1. Air- or kiln-dry to maximum 19 percent moisture content, prior to installation. Lumber must be 19 percent moisture content prior to close-in and finish.
2. Furnish S4S unless otherwise noted.
3. Size to conform with rules of governing standard. Sizes shown are nominal unless otherwise noted.

2.03 SOURCE QUALITY CONTROL

A. Grade Mark each piece of lumber. Marking must be done by recognized agency. Lumber Manufacturer's Association Certificates may be accepted in lieu of such grade and trademarks.

1. Douglas Fir shall bear WCLIB grade stamp.

B. Plywood Sheathing: Each panel shall be legibly identified as to type, grade, and specie by APA grade. If plies are spliced, the slope of the scarf shall not be steeper than 1:8. White pockets will not be permitted in face plies.

C. Each piece of preservative treated lumber shall bear AWPA stamp.

2.04 WOOD PRESERVATIVE TREATMENT

A. Preservative treatment: Comply with applicable requirements of AWPA standards C2 for lumber and C9 for plywood. After treatment, kiln dry lumber to a maximum moisture content of 19 percent, and plywood to 15 percent.

1. Pressure treat members connected with roofing, flashing and weatherproofing; including but not limited to cants, nailers, curbs, equipment supports and blocking.

2. Pressure treat members that are concealed and in contact with masonry or concrete, including, but not limited to, sills, nailers, blocking, furring and studs.

PART 3 – EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Prior to all work of this Section, carefully inspect the installed work of all other trades, and verify that all such work is complete to the point where this installation may properly proceed.
2. Verify that rough carpentry may be performed in strict accordance with the original design and all pertinent codes and regulations.

B. Selection of Lumber Pieces: Carefully select all members. Select individual pieces so that knot and obvious defects will not interfere with placing bolts or proper nailing or making proper connections. Cut out and discard all defects which will render a piece unable to serve its intended function.

C. Lumber may be rejected by the 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. No load carrying member shall be exposed to earthen materials.

D. Shimming: Do not shim any framing component.

3.02 FASTENING

A. Nailing: Except as otherwise indicated on Drawings or specified, all nailing shall be as scheduled on Drawings:

1. Nails or Spikes shall be common wire unless noted otherwise. Penetration of nails or spikes shall be one-half the length of the nail or spike into the piece receiving the point. However, to connect pieces 2 inches in thickness, 16d nails shall be used unless noted otherwise.
   a. Bore holes for nails wherever necessary to prevent splitting.
   b. Use finish or casing nails for finish work.
   c. Use of nailing guns is as limited by CBC and must be approved by Architect and DSA. Submittal of guns and nails is required.

B. Bolts: Bolts shall be of sizes indicated. Drive fit with washers under nuts. Tighten all bolts and screws before closing in.

C. Framing Devices: As specified under Products, sizes as indicated. Use half-length nails where required.

D. Lag Screws: Pre-Bore lead holes and install per NDS, current edition.

3.03 FRAMING AND ROUGH CARPENTRY

A. Sills: Shall be in long lengths of sizes shown, fastened with anchor bolts at exterior walls and with powder driven fasteners at interior walls as indicated, a minimum of two (2) fasteners per piece and a bolt within 9" but not nearer than 6" from end of piece. Place malleable iron or steel plate washers (but not cut washers) under nuts bearing on wood. Set sills level and true and bed exterior wall sills and interior bearing wall sills on 1/2 inch dry-pack or non-shrink grout.

B. Studs, Posts and Columns: Shall be full length. Corners shall be as detailed. Partitions or walls containing plumbing, heating or other piping shall be so formed as to give proper clearance for materials. Cut members as required to provide full bearing at ends. Connect to structure as indicated.

C. Plates: Shall be in long lengths and spliced as shown.

D. Blocking: Shall be same thickness and width of studs or joists unless shown otherwise. Blocking shall not be spaced over 8'-0" o.c. Install fire blocking in accordance with CBC, Section 717. Install blocking at all plywood joints unless otherwise noted on the drawings. Install blocking for fastening all surface applied items.

E. Joists and Beams: Shall be in long lengths and spliced over bearings unless shown otherwise. Install with crown side up. Beams or headers indicated to be built up of two or more joists shall be fabricated on the job using full length members. For two-piece members, stitch nail pieces together with 16d common nails spaced not over 12" o.c. and staggered. Clinch nails protruding through members.

1. Provide double joists and headers at all openings through floors and roofs unless otherwise shown on Drawings.
2. Provide typical headers at all openings through walls where one or more studs are required to be cut. For penetration through walls narrower than stud spacing, provide solid backing on all sides for fastening finish materials.

F. Plywood Structural Sheathing: Install to pattern indicated and provide blocking at joints where noted on the drawings. Center all joints overbearing supports. Nail to framing as indicated. Install plywood with face plies perpendicular to joists or studs unless indicated otherwise.

G. Wood Furring, Stripping and Grounds: Install as shown or required to provide nailing of materials or passage of pipes, conduits, etc., not otherwise accommodated.

H. Bridging: Space not over 8'-0" o.c. for spans over 16'-0". Spans over 8'-0" and under 16'-0" shall have bridging placed at midspan. Bridging shall be two 2 x 3's or solid blocking as indicated. Joists 8" or less in depth shall not require bridging unless specifically indicated.

I. Backing: Shall be provided for all wall and ceiling finishes and for supporting of fixtures and equipment for all trades, including toilet partitions, toilet room accessories, frames, case work, mirrors, trim, applied wall finishes, etc. Coordinate placement of backing and supports with manufacturer or supplier of mounted items.

J. Building Paper: Install two layers in all exterior locations. Install with weather lap edges a minimum of 2 inch horizontal and 6-inch vertical laps. Continue building paper minimum 6 inches around inside and outside corners. Fasten in place with appropriate staples.

K. Cuts or holes in preservative treated wood shall be treated in accordance with AWPB standard M4 in the field.

3.04 MISCELLANEOUS HARDWARE

A. Finish hardware is specified in Section 08 71 00. All other hardware indicated or required but not specified elsewhere shall be furnished and installed hereunder, including appropriate screws or other fastening devices.

3.05 MISCELLANEOUS CARPENTRY WORK

A. Miscellaneous Carpentry Work not included under other sections shall be furnished and installed hereunder as indicated. Carefully locate and securely anchor such items to structure.

B. Drypack: Drypack shall consist of 1 part high early strength Portland cement to not more than 3 parts of sand by volume. Add only a minimum amount of water to hold the mixture in shape while packing and to provide hydration. Solidly ram drypack into place to provide uniform bearing and cure with moist sacks or cloths for a period of at least three (3) days.

C. Plywood Backing for electrical, telephone, and similar types of wall mounted equipment shall be provided hereunder where required. Plywood shall be 3/4" thick exterior A-C plywood with 'A' face exposed.

D. Shoring and Bracing: Shore or brace for temporary support of all work as required during the construction period except any shoring and bracing specified and included under other sections of these specifications.

E. Temporary Enclosures: Provide and maintain all barricades and enclosures required to protect the work in progress.

F. Protect all work in progress and all work installed, as well as the work of all other trades. Any work damaged as a result of the work under this section shall be corrected to its original condition or replaced if directed by the Architect and at no increase in cost to the Owner.

G. Protection Devices: Pedestrian walkways, barricades, lights, shoring and other protective structures and devices necessary for the protection of pedestrians shall conform in all respects to the requirements of CBC, Section 3306 Title 24 and to the requirements of the Department of Public Works.

3.06 FRAMING TOLERANCES

A. Maximum variation from true flatness: 1/4 inch in ten feet in any direction.

3.07 CLEAN-UP

A. Upon completion of the work of this Section, remove all surplus materials, rubbish, and debris from the premises.

END OF SECTION

SECTION 07 26 00

VAPOR RETARDERS

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. Concrete Vapor Emission Control System for remediation of excessive slab moisture and / or alkyd levels.
2. Repairs and preparation of concrete substrate and to install the concrete vapor emission control system.
3. Subfloor testing after concrete treatment.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Bid Form: Bid Allowance with Unit Cost for potential slab treatment.
3. Section 00 72 00: General Conditions.
4. Section 00 72 00: Exhibit C: Abatement of Hazardous Materials.
5. Section 33 13 13: Concrete Work: Subfloor surface.
6. Section 06 10 00: Rough Carpentry: Subfloor surface.
7. Section 09 65 00: Resilient Flooring.
8. Section 09 65 43: Linoleum Floor Coverings.
9. Section 09 96 56: Epoxy Flooring and Base System.
10. Section 09 68 00: Carpet.

C. REFERENCES

1. ASTM C920-18 – Elastomeric Joint Sealants.
2. ASTM E96-24a – Test Method for Water Vapor Transmission of Materials.
3. ASTM F710-22-Practice for Prepping Concrete Floors to Receive Resilient Flooring.
4. ASTM F1869-23 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
5. ASTM F2170-19a - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

1.02 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Ten-year experience in producing moisture vapor control emission products.
2. Minimum $5-million product liability insurance policy from an A-rated carrier.

3. A warranty program covering coats associated with repair or replacement of concrete vapor emission control system and finish floor covering or coating, including repair or replacement labor.

B. Installer Qualifications:

1. Installer shall have experience in the installation of floor covering or floor coatings and shall have experience in the installation of concrete vapor emission control systems.
2. Floor covering installer must be factory trained and certified for the installation of the specific products being installed.
3. Installer to provide project inspector proof of certification prior to starting work.
4. Certified installer must be present on job site while work is in progress.

C. Testing Laboratory Qualifications:

1. Certified, bonded, qualified and experienced agency to perform pH and moisture vapor emission tests.

D. Pre-installation Meeting:

1. Contactor to notify Construction Manager with a minimum of 5-days' notice when anticipated to be ready for pre-installation meeting.
2. Contractor, installer and manufacturer representative are required to attend pre-installation meeting. Contractor is responsible for coordinating and scheduling their attendance.
3. Construction Manager will schedule meeting with Contractor team, Project Inspector, and Architect.
4. Purpose of Meeting: To review subfloor condition and test results; determination of appropriate treatment system(s) and location(s); and review installation requirements.

1.03 SUBMITTALS

A. Provide a complete submittal package with all components required within this section. Submit per Section 00 72 00.

1. Product Data: Provide product data describing physical and performance characteristics, material safety data sheets, certificates, warranty information and manufacture's installation instructions for proposed product.
2. Submit product manufacturer's field reports and test reports with warranty certification.
3. Submit anhydrous calcium chloride testing according to ASTM F1869-23 and RH Probe Tests results according to ASTM F2170-19a. Submit substrate pH readings. Tests shall be performed by the Owner's Inspector and results provided to the Architect, Owner, General Contractor, flooring installer and Water Vapor Reduction System Manufacturer's Representative.

1.04 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store products in an approved ventilated dry area; protect from dampness, freezing, and direct sun light. Product should not be stored in areas with temperatures in excess of 90 °F or below 50 °F.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Areas to receive Vapor Emission Control System shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature per manufacturer's recommendation.

B. Maintain ambient temperature required by manufacturer three days prior to, during, and 24 hours after installation of Vapor Emission Control System.

C. Do not apply moisture vapor reduction system to unprotected surfaces or when water is accumulated on the surface of the concrete.

D. Do not apply water vapor reduction system when temperature is lower than 50° F or expected to fall below this temperature within 24 hours from time of application.

E. Protection: Protect water vapor reduction system to prevent damage from topical water for a minimum period of 24 hours from time of application.

1.06 WARRANTY

A. Contractor shall file a pre-installation checklist with the manufacturer (as required) and receive written confirmation of the approval to proceed in order to obtain full warranty.

B. Emission control system warranty must be from the manufacturer, in writing, and cover the cost of system materials, cementitious compounds and labor costs of application and preparation. In addition, the warranty must extend to the flooring material, adhesive and installation labor.

C. Warranty period shall be no less than ten years or the life of the flooring covering whichever comes first.

D. Warranty exclusion shall be limited to:

1. Moisture failure due to topical intrusion of plumbing failure or other substances entering from the surfaces.
2. Seismic damage occurring after installation.
3. Replacement of flooring during warranty period as removal of flooring could damage emission control system.
4. Aggregate found to be defective (expansive and reactive aggregate are examples).

E. Warranty shall not exclude cracks visible at time of installation nor "improper installation".

F. Manufacturer to provide evidence of a product liability insurance policy. Insurer shall have no less than an “A” rating from one of the four major rating services. A certificate of insurance shall be delivered to the Owner and shall name the Owner, Architect and General contractor as co-insured. Liability shall be in the amount of $5 million per occurrence.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Vapor Emission Control System: The appropriate system(s) shall depend on the existing slab moisture and pH levels and the requirements of the specific floor covering product. The determination of which of the following systems would be most appropriate and the extent of treatment area(s) shall be made by the Owner’s representative once the existing slab testing results are known.

1. Koester VAP1 2000 System. 100% solids epoxy.
2. Mapei Planiseal VS System. An alkali-resistant, two-component, 100%-solids epoxy coating that effectively stops moisture-related problems with floor coverings.
3. ARDEX MC™ RAPID.100% solids epoxy system.

2.02 MIX DESIGNS

A. VAP1 2000:

1. Use clean containers and mix thoroughly as per Manufacturer's requirements to obtain a homogeneous mixture. Use a low-speed motor less than 400 rpm and a two bladed Jiffy mixing blade only. DO NOT AERATE. Mix ratios are measured by volume.
2. VAP I® 2000 Mix Ratio: Mix Component A and B at a ratio of 2.4:1 by volume.

B. Mapai Planiseal VS:

1. Premix Part A to a homogenous consistency (2 to 3 minutes) using a low-speed mixer (at 300 to 450 rpm) and a “jiffy” (paint mixer) mixing paddle.
2. Pour Part B into Part A container and mix thoroughly to a smooth, homogenous consistency. Do not mix at high speeds, which can trap air within the mixed material.
3. Pour and spread the entire unit of any mixed Planiseal VS onto the substrate within 5 minutes of mixing.

C. ARDEX MC PLUS:

1. Each individual unit of ARDEX MC RAPID™ Red and ARDEX MC RAPID™ Green contains separate, pre-measured quantities of the hardener (Part A) and the resin (Part B). The hardening agent (Part A) is added to the resin (Part B).
2. ARDEX MRP and/or ARDEX K 301 are mixed in 2-bag batches at one time. Mix each bag of powder with the prescribed amount of water using an ARDEX Mixing Paddle and a 1/2" heavy-

duty drill (min. 650 rpm). Mix thoroughly for approximately 2-3 minutes to obtain a lump-free mixture. Follow written installation instructions for each material.

3. For mix designs related to the use of ARDEX underlayment's and toppings, refer to the standard mixing instructions for installation over concrete as shown in the manufacturer's installation instructions.
4. For instructions on the filling of dormant cracks and joints, follow the written instructions of the selected epoxy manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Calcium Chloride, RH Probe and pH test requirements:

1. Anhydrous calcium chloride testing shall be performed by the Owner's Inspector.
2. Provide anhydrous calcium chloride tests according to ASTM F1869-23 protocol.
3. Provide RH Probe Tests according to ASTM F2170-19a protocol.
4. Only conduct calcium chloride tests at the same temperature and humidity expected during normal use. If this is not possible then follow the F1869 method for non-acclimated spaces. Maintain these conditions 48 hours prior to and during tests. Water vapor transmission levels are directly affected by ambient room temperature and readings conducted without a sustained ambient temperature and humidity are NOT acceptable.
5. Provide substrate surface pH readings.
6. Owner's Inspector shall provide test results with a marked-up floor finish plan showing test result. Inspector shall provide a written clarification on status of the ambient air temperature and humidity before and during the testing procedures.

B. Concrete Slab Inspection

1. Existing concrete slabs - Testing for concrete deficiencies and contaminates such as un-reacted silicates, chlorides, A.S.R. (alkali-silica reaction), oil contamination, etc. is recommended by Koster to avoid bonding issues. These conditions can cause bonding concerns with all epoxy and finished floor coatings, including the Koster VAP 1 2000. This testing is not required by Koster. This testing should be performed by the owner's independent testing agency using utilizing standard coring methods and review of the history of the slab installation if available. Concrete should conform to ACI Committee 201 Report "Guide to Durable Concrete."
2. New concrete slabs - Review Section 03 30 00 curing compounds. Silicate based curing compounds should be avoided.

3.02 PREPARATION

A. Inspect all surfaces with regard to their suitability to receive moisture vapor reduction system with manufacturer's representative.

B. Clean all surfaces to receive moisture vapor reduction system. Shot blast all floors to a CPS #3 or #4 and clean surfaces with vacuum and remove all residue off the concrete. Grinding is allowed only in

areas not accessible by shot blasting. Do not acid etch. Remove ALL defective materials, and foreign matter such as dust, adhesives, gypsum based patching and leveling compounds, paint, dirt, un-reacted sprayed on silicates, floor hardeners, bond breakers, oil, grease, curing agents, form release agents, efflorescence, laitance, shot blast bee bees, etc. Repair all cracks, expansion joint, control joints, and open surface honeycombs and fill in accordance with Manufacturers recommendations. Inform vapor reduction system manufacturer if concrete additives like silicates or chlorides or any other soluble compounds that have been used in the concrete mix or topically applied. Reinforcing fibers that are visible after shot blasting must be removed and vacuumed leaving no fibers left on the concrete surfaces. Provide uncontaminated, sound surface.

C. Repair concrete prior to moisture vapor reduction system. Consult with vapor reduction manufacturer to determine suitable products for concrete repair.
D. Shot blast a small test area and review surface profile with the finished flooring applicator. As the moisture vapor reduction system is not a leveling material make sure the flooring installer is aware that a feather finish or leveling material may be utilized to “flatten” the concrete after the application of the moisture vapor reduction system and prior to the flooring installation.

E. Clean substrate surfaces to receive system treatment and treat surface irregularities with a 100% Portland Cement based patching compounded and cementitious fill compatible with prescribed system treatment as recommended by the manufacturer of the moisture control system.

F. At all treated locations under finish goods i.e. carpet, VCT, etc., install self-leveling material to provide a smooth and uninterrupted concrete substrate for proper installation of floor finish.

3.03 JOINT AND CRACK PREPARATION

A. VAP1 2000:

1. Fill cracks, control joints, voids and deteriorated concrete with CTS Cements Rapid Set Cement All, Mortar Mix, Concrete Mix or Skim Coat prior to the VAP I 2000 application. Allow the products to cure according to Rapid Set's requirements before applying the VAP products over the repaired area. Do not use gypsum based cementitious patching, leveling and repair mortars under the VAP I 2000 systems. Cracks should be opened up to at least 1/4" x 1/4" to allow for a proper amount of Rapid Set materials to fill the voids. Any cracks/voids that may be contaminated by known or unknown substances should be routed out to remove any contaminants.
2. Expansion joints should be repaired per the detail on the VAP I 2000 data sheets. A fumed silica epoxy thickening agent (Aerosil or Cabosil) can be added to the VAP I 2000 products and used in place of cementitious materials for control joints and cracks if needed.
3. Consult with Koster America for crack general repair guidelines.

B. Mapai Planiseal VS:

1. Repair cracks before application of the Planiseal VS using an appropriate high-modulus epoxy (Planibond EBA or Planibond CR 50) mixed with sand if required (depending on the size of crack under repair). Cracks narrower than 1/8” (3mm) may typically be filled with Planiseal VS neat. Cracks wider than 1/8” (3mm) are to be repaired with suitable high-modulus epoxy such as

Planibond EBA or Planibond CR 50 (consider an epoxy mortar if appropriate) filled to 1/8” to ¼” (3 to 6mm) shy of the substrate surface (just below flush).

2. Avoid overfilling of cracks with high-modulus epoxies that will lead to epoxy spilling onto substrate. Any epoxy that spills onto the substrate surface must be removed, and any remaining residue must be fully seeded with sand. The subsequent application of the Planiseal VS must take place after all loose sand have been vacuumed up off the floor, and fully encapsulate the epoxy utilized for crack repair.
3. Contraction, control or saw-cut joint treatment – Dormant control joints may typically be filled with Planiseal VS, or with Planibond EBA or Planibond CR 50 (consider an epoxy mortar if appropriate) filled to 1/8” to ¼” (3 to 6mm) shy of the substrate surface (just below flush).

C. ARDEX MC:

1. Moving Joints – honor all expansion and isolation joints up through the ARDEX Moisture Control System, and underlayment or topping.
2. Saw cuts, control joints and dormant cracks –To ensure that a continuous barrier to moisture emissions is created over the entire surface, ARDEX recommends the use of a two-part, low viscosity rigid epoxy crack and joint filler to fill small, non-moving cracks and saw-cut joints in existing concrete substrates. Cracks greater than a hairline in width [1/32” (0.79 mm)] and saw-cuts must be filled in strict accordance with the installation instructions provided by the ARDEX Technical Department. Once the dormant cracks and saw-cuts have been properly filled, allow these areas to cure thoroughly in accordance with the epoxy manufacturer’s recommendations prior to proceeding with the ARDEX MC™ RAPID installation.
3. Saw Cuts, Control Joints and Dormant Cracks – fill all non-moving joints and cracks greater than 1/32” with a rigid, low-viscosity, two-part epoxy joint sealant. Once the cracks and joints have been properly filled, broadcast a sand layer to refusal and allow these areas to cure as recommended by the epoxy manufacturer prior to proceeding with the installation of the ARDEX MC™ RAPID.

3.04 INSTALLATION (per manufacturer’s guidelines or as follows)

A. The coverage rates vary by system. Follow manufacturer recommendations for the specific project application.

B. Application of moisture reduction system shall be in strict accordance with manufacturer recommended methods and installation information.

C. Cementitious underlayment with suitable primer is recommended if required by the Owner, floor covering installer, or the floor covering manufacturer to smooth and/or level surfaces after shot blasting and installation of the moisture reduction system. No underlayment or feather finish system is allowed under the moisture reduction system material. When water-based adhesives are utilized in the floor covering installation, use an approved cementitious underlayment system with primer prior to the installation of the flooring system. Contact the adhesive manufacturer for their minimum recommended thickness of cementitious underlayment to absorb excess moisture in the adhesive. Typically, a minimum of 1/8” is required. Note this is only for some water-based adhesives.

3.05 PROTECTION

A. Prohibit any traffic or any activity that generates dust or debris from contaminating the treated slab until finished flooring is installed.

B. Do not install finished flooring until the vapor control system has fully cured in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 07 60 00

FLASHING AND SHEET METAL

PART 1 – GENERAL

1.01 SUMMARY

A. All applicable portions of Division 1, including the drawings and general provisions of the contract, the general and supplementary conditions and Division 1 specification sections which apply to work of this section as if printed herein.

B. Section Includes:
1. Flashings, counter flashings, and copings as indicated on the Drawings and specified herein.

C. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 05 50 00 - Miscellaneous Metal.
3. Section 07 52 16 – SBS Modified Bituminous Membrane Roofing.
4. Section 07 54 19 – Polyvinyl-Chloride Roofing.
5. Section 07 71 23 – Gutters and Related Flashings.
6. Section 07 90 00 – Joint Sealants.
7. Refer to Division 7, for Roofing Sections, and Prefabricated roof curbs, hatches, roof deck insulation, and Division 8 component daylight systems.

1.02 REFERENCES

A. Fabricate sheet metal items from sheet steel in accordance with ASTM G90-23.

B. ASTM A924-22a - General Requirements for Steel Sheet, Metallic-Coated by the Hot Dip Process.

C. FS TT-C 494B – Federal Specification for Coating Compound, Bituminous, Solvent Type, Acid Resistant.

D. SMACNA - Architectural Sheet Metal Manual, current edition.

E. AWS - American Welding Society.

1.03 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Shop Drawings: Indicate locations, configurations, jointing methods, welding methods, fastening methods, expansion joint layouts, downspout layout and installation details.

C. Samples: Submit two samples, 12 inches long illustrating component design, finish, color, and configuration.

1.04 QUALITY ASSURANCE

A. Conform to SMACNA Manual for architectural sheet metal flashing and installation details.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Where general flashing pieces are shown on drawings, provide steel sheet metal of at least 22-gauge steel unless otherwise noted on drawings.

B. Aluminum Sheet: 0.032-inch thick (20-gauge) and in accordance with ASTM B209-21a, 6063-T5 in color finish as selected by Architect.

C. Extruded Aluminum: Manufacturer's standard extrusions of sizes and profiles indicated, 60063-T52, AA-C22A41 clear anodized finish; 0.080-inch minimum thickness for primary legs of extrusions.

D. Stainless Steel: AISI Type 302/304, complying with ASTM A167-99(2009), 2D annealed finish, soft, except where harder temper required for forming or performance; 0.0156-inch thick (28 gauge) except as otherwise indicated.

E. Galvanized Steel: .336-inch thick (22 gauge) ASTM A924 -09a, Grade A, G90 zinc coating.

2.02 ACCESSORIES

A. Fasteners and Clips: Provide as required and appropriate for the materials being fastened. Where fasteners or clips may be exposed to outside weather conditions, provide galvanized or stainless-steel type.

1. Provide fasteners such as bolts, screws, and nails hot-dip galvanized as specified in accordance with ASTM A153-23.

B. Where rivets will be used, provide malleable iron type with rust-inhibitive coating.

C. If drive pins are incorporated into work, provide Omark or other approved, cadmium plated with neoprene facing, at least 1-inch long, with neoprene washers.

D. Solder: For use steel or copper, provide 50 – 50 tin/lead solder (ASTM B32-20) with rosin flux.

E. Solder: For use with stainless steel, provide 60 – 40 tin/lead solder (ASTM B32-20) with acid-chloride type flux, except use rosin flux over tinned surfaces.

F. Bituminous Coating: SSPC – Paint 12, solvent-type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

G. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.

H. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Section 07 90 00 Joint Sealers.

I. Epoxy Seam Sealer: Two-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior non-moving joints including riveted joints.

J. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.

K. Paper Slip Sheet: 5 lbs. rosin-sized building paper.

L. Polyethylene Underlayment: Minimum 6-mil carbonated polyethylene film resistant to decay when tested in accordance with ASTM E154-08a(2025).

M. Reglets: Metal or plastic units of type and profile indicated, compatible with flashing indicated, noncorrosive.

N. Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on flashing sheet.

2.03 FABRICATION

A. General Metal Fabrication:

1. Shop fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate waterproof and weather-resistant performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work.
2. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed seams with epoxy seam sealer; rivet joints for additional strength where required.

B. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, in edges to be seamed, form seams and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently weather/waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

D. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

E. Separations: Provide for separation of metal from incompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

F. Aluminum Extrusion Units: Fabricate extruded aluminum running units with formed for extruded aluminum joint covers. Fabricate mitered and welded corner units.

2.04 PREFABRICATED SHEET METALS

A. Copings: Provide factory prefabricated 22-gauge galvanized steel sheet metal continuous snap on type copings per SMACNA Chapter 3, Figure 3-1 with EIEPGE Styles. Copings shall be maximum 10-foot lengths, secured at one (1) end and free at other end and/or per SMACNA requirements. Cover plate shall extend 6-inch minimum beyond 1/2-inch space between coping lengths. Secure cover plate with screw in neoprene washer per SMACNA Figure 3-1-Detail 1 in oversized holes. Provide copings manufactured by MM Systems Corporation, Construction Specialties, Tremco, KC Metals, Fry Reglet or others, as approved by Architect.

1. Pre-finish coping in Kynar 500 coating of standard color as selected by Architect.

C. All other flashing: Provide minimum 22-gauge galvanized flashing to the sizes and shapes as detailed on the drawings. All exposed flashing shall be primed and painted per the paint specification sections. Provide minimum two (2) coats of paint.

D. Expand-O-Flashing, for Expansion Joints at Roof Expansions and Roof/Wall Expansion Joint Conditions: Provide factory Expand-O-Flash by Johns Manville or equal. Provide 10 foot or maximum lengths possible. Fabricate Expand-O-Flash expansion joint covers as detailed on the drawings. Use Type N-Neoprene Sheet-Black, flange shall be minimum 26 ga. galvanized steel bellows width minimum 4 inches.

E. Expansion and Seismic Covers for Expansion Joints and Seismic Joints for Floors, Ceilings, Walls and Roofs: Provide factory aluminum joint covers by Balco Inc. or equal. Provide maximum lengths possible. Fabricate expansion and seismic joints covers Model No. RDA-4 with aluminum center plate. Provide extruded aluminum sub-channel (6063-T5) standard mill finish. Movement capabilities shall be at 50 percent or as recommended by the manufacturer.

1. At Rated Expansion and Seismic Joint Conditions up to 2 Hour Rated Systems: Use Balco Fire Barrier Systems as tested in accordance with ASTM E1966-24 and as listed with Omega Point Laboratories Inc.

2. Expansion and Seismic Joint Covers at Interior, Vertical, and Ceiling Surfaces: Use 6000 Series No. 6GOU- Aluminum snap lock cover plate with standard aluminum mill finish.
3. Expansion and Seismic Joint Cover at Exterior Vertical and Ceiling/Soffit Surfaces: Use FCWW aluminum with standard mill finish.

F. All Expansion and Seismic Covers that intersect at Floor to Wall, Wall to Ceiling/Soffit, Roof to Parapet, etc.: Use factory preassembled transition pieces that will meet the manufacturers' minimum requirement for a watertight intersection connection.

G. Balconies Edge Flashing: Use Schluter-Bara-Rak powder-coated aluminum edging profile with drip lip. Extruded aluminum to ASTM B221-21, 6463-T5 alloy with integral trap E201-DAL-perforated anchoring leg and complete with outside/inside corners and connectors. Length 8 ½ inches long. Color from standard color. Use a thin set mortar over the trapezoid perforated anchoring leg. Apply waterproof membrane per manufacturers' requirements.

PART 3 – EXECUTION

3.01 PREPARATION

A. Inspect substrate conditions prior to installation of sheet metal items. Conditions which could be detrimental to correct and proper installation of sheet metal assemblies are to be called to the attention of the Owner for their disposition prior to sheet metal work being installed.

B. Coordinate fabrication and installation of sheet metal items with work of others such as roofing, curtainwall and windows, sealants, mechanical and electrical.

3.02 INSTALLATION

A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

B. Underlayment: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

D. Install reglets to receive counterflashing in manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, finish reglets to trades of masonry work, for installation as work of Division 4 sections.

E. Install counter flashings in reglets, either by snap-in seal arrangement or by welding in-place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated in depending on degree of sealant exposure.

F. Install elastic flashing in accordance with manufacturer's recommendations. Where required, provide for movement as joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water for flashing. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.

G. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6 inches o.c. Fabricate seams at joints between units with minimum 3-inch overlap, to form a continuous, waterproof system.

H. Conductor Head Guards: Install "bee-hive type" strainer-guard at conductor heads, removable for cleaning downspouts.

I. Flash around exterior openings in the building where other waterproofing methods are insufficient.

J. Joints

1. Typically, provide flat locked joints with sealant between metal surfaces, unless shown otherwise. Where standing seams are required, provide with folded corners.
2. Provide minimum of 3-inch laps.
3. Where concealed joints are possible, provide flat locked joints with 3-inch reinforcing behind, set-in full bed of sealant.
4. Do not leave sheet metal joint unsealed. See sealant section of these specifications.

3.03 INSPECTION

A. Immediately following installation of sheet metal work, touch-up areas where primer has been removed during installation operations and where soldering has occurred.

B. Where architectural coatings are provided, touch-up marred or abraded finishes with compatible coating which can be expected to provide the same serviceability as factory applied coatings.

3.04 CLEANING

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

3.06 PROTECTION

A. Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

SECTION 07 71 23

GUTTERS AND RELATED FLASHINGS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Galvanized steel gutters.
2. Downspouts.
3. Related flashing.

B. Related Sections

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 05 50 00 - Metal Fabrications.
3. Section 07 60 00 - Sheet Metal Flashing and Trim.
4. Section 07 52 16 – SBS Modified Bituminous Membrane Roofing.
5. Section 07 54 19 – Polyvinyl-Chloride Roofing.
6. Refer to Division 7, for Roofing Sections, and Prefabricated roof curbs, hatches, roof deck insulation, and Division 8 component daylight systems.
7. Section 07 90 00 - Sealants.
8. Section 09 91 00 - Painting: Field painting of metal surfaces.

1.02 REFERENCES

A. ASTM A924-22a – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

B. FS TT-C-494 - Coating Compound, Bituminous, Solvent Type, Acid Resistant.

C. SMACNA - Architectural Sheet Metal Manual, current edition.

D. AWS - American Welding Society.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Shop Drawings: Indicate locations, configurations, jointing methods, welding methods, fastening methods, expansion joint layouts, downspout layout and installation details.

C. Samples: Submit two samples, 12 inches long illustrating component design, finish, color, and configuration.

1.05 QUALITY ASSURANCE

A. Conform to SMACNA Manual for architectural sheet metal flashing and installation details.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01 66 00.

B. Stack pre-formed material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.07 COORDINATION

A. Coordinate painting portions prior to installation and the work with downspout discharge pipe inlet.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Galvanized Steel: ASTM A924 / A924M-09a, Grade A, G90 zinc coating.

B. Schedule 10 galvanized pipe.

2.02 COMPONENTS

A. Gutters: 18-gauge core steel. Minimum size shall be 6”x6” or as otherwise shown on drawings.

B. Downspouts: Finished grade to bottom of gutter shall be schedule 10 galvanized pipe, round shape only, 3” minimum diameter or size as shown on drawings.

2.03 ACCESSORIES

A. Anchorage Devices: SMACNA requirements.

B. Gutter Supports: Straps.

C. Fasteners: Galvanized steel or stainless steel and as specified in Section 05 50 00. Finish exposed fasteners same as flashing metal.

D. Clean out Tee: Smith 4510 cleanout tee with countersunk plug and round access cover. 4”, 5” or sized as required to coordinate with downspout and underground piping sizes.

E. Touch-up Primer: Cold applied zinc-rich type.

F. Protective Back Coating: FS TT-C-494, bituminous.

G. Sealant: Type as specified under Section 07 90 00.

H. Conductor-Head Guards: 20-gauge bronze or nonmagnetic stainless-steel mesh or fabricated units, with salvaged edges and noncorrosive fasteners. Select materials for compatibility with gutters and downspouts.

I. Overflow Drain: 18 ga. galvanized sheet metal. Approximately 2 inches high by 2 inch diameter.

2.04 FABRICATION

A. Form gutters of profiles and size indicated, to SMACNA requirements.

B. Gutters shall be fascia mounted whenever possible. See drawings for additional mounting information.

C. Fabricate with required connection pieces.

D. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

E. Hem all exposed edges of metal.

F. Welding process shall be Metallic Inert Gas (MIG).

G. Weld all shop formed metal joints. Grind exposed joints flush with adjacent surfaces and apply touch-up primer as specified.

H. Butt weld all field assembled gutter sections. Grind exposed joints flush with adjacent surfaces and apply touch-up primer as specified.

I. Fabricate gutter sections with SMACNA butt type expansion joints at 40 feet maximum with a minimum of one (1) downspout in each 40 foot section. Provide additional downspouts as necessary to accommodate expansion joint locations.

J. All joints shall be watertight per SMACNA standards.

K. All downspouts shall have fully welded joints and be ground smooth. Provide T-shaped bracket welded to back of downspout for bolting to building. See drawings for additional information.

L. All downspouts that spill to grade shall have a 45-degree elbow of same pipe profile fully welded to bottom of downspout.

M. All downspouts connecting to underground storm drainage systems shall be provided with a cleanout tee at grade.

N. At all individual gutter sections, provide an overflow drain at opposite end of gutter from downspout. Overflow drain shall be fully welded to gutter bottom. I.D. shall match the I.D. for the downspout outlet.

2.05 FINISHES

A. Field paint gutters under provisions of Section 09 91 00.

B. Apply bituminous protective backing on surfaces in contact with dissimilar materials.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

3.02 INSTALLATION

A. Install gutters and downspouts as shown on drawings. Install expansion joints, additional downspouts and accessories as specified.

B. Field assemble (weld) gutter sections at “ground level” wherever possible and lift into place as one unit.

C. All downspout sections shall be fully welded, ground smooth, primed and painted. All downspouts shall be mechanically fastened to building at top, bottom, and maximum 6 feet on center.

D. Install gutters level and straight in line with building. Shim horizontally and vertically as required to level. Installed gutter to have no ponding water more than ¼” deep.

E. Water test all gutters and downspouts for leaks and ponding in presence of IOR.

F. At all welded connections, end caps, overflows, and outlets, provide bituminous coating minimum 1 inch each side of joint.

G. Provide 3-inch closure plate at all gutter expansion joint locations.

END OF SECTION

SECTION 07 90 00

JOINT SEALERS

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDE

1. Preparing sealant substrate surfaces.
2. Concrete Joint Sealants.
3. Sealant and backing.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 00 72 13: General Conditions.
3. Section 03 30 00: Cast-In-Place Concrete.
4. Section 07 60 00: Flashing and Sheet Metal: Sealants used in conjunction with metal flashings.
5. Section 07 71 23: Gutters and Related Flashings.
6. Section 08 11 00: Metal Doors and Frames: Perimeter sealants.
7. Section 09 29 00: Gypsum Board Systems.
8. Division 22: Mechanical.
9. Division 26: Electrical.
10. Section 32 16 00: Site Concrete.

C. REFERENCES

1. ASTM C834-17(2023) Standard Specification for Latex Sealants.
2. ASTM C920-18(2024) Standard Specification for Elastomeric Joint Sealants.
3. ASTM E84-24 Standard Test Method for Surface Burning Characteristics of Building Materials.
4. ASTM E119-03a(2023)e1 Standard Test Methods for Fire Tests of Building Construction and Materials.
5. ASTM E814-24 Standard Test Method for Fire Tests of Penetration Firestop Systems.
6. FM (Factory Mutual) - Fire Hazard Classifications.
7. UL - Fire Hazard Classifications.
8. UL 263 – Standard for Fire Tests of Building Construction and Materials.
9. UL 723 - Test for Surface Burning Characteristics of Building Materials.
10. UL 1479 - Fire Tests of Through-Penetration Firestops.
11. FS TT S 00227 Sealing Compound: Elastomeric Type, Multi-Component.
12. FS TT S 00230 Sealing Compound: Elastomeric Type, Single Component.
13. FS TT S 001543 Sealing Compound, Silicone Rubber Base.

1.02 SUBMITTALS

A. Submit manufacturer’s product data under provisions of Section 01 33 00 for each product required.

B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.

C. Submit samples under provisions of Section 01 33 00.

D. Submit standard color ranges of exposed materials for Architect selection.

E. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

1.03 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years’ experience.

B. Applicator: Company specializing in applying the work of this section with minimum three years’ experience, with projects of a similar size and type.

C. Conform to Sealant Waterproofing and Restoration Institute requirements for materials and installation.

D. Prior to installation of joint sealants, field test adhesion to joint substrates.

1. Install joint sealants in 5-foot joint lengths. Allow to cure before testing. Test adhesion by pulling sealant out of joint.
2. Perform field tests for each type of elastomeric sealant and joint substrate.
3. Arrange for tests to take place with joint sealant manufacturer’s technical representative present.
4. Report whether or not sealant in joint connected to pulled out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
5. Sealants not evidencing adhesive failure from testing, in absence of other indications of non-compliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrate during testing.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

C. Do not install sealants under adverse weather conditions or when temperatures are above or below manufacturer's recommended limitations for installation.

D. Deliver materials in the unopened, original containers or unopened packages with manufacturer's name, labels, product identification, color, expiration period, curing time and mixing instructions for multi-component materials.

1.05 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with all Sections referencing this Section.

1.06 WARRANTY

A. Provide two-year warranty for materials and workmanship under provisions of Section 01 33 00.

B. Warranty: Include coverage of installed sealants and accessories which fail to achieve airtight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 – PRODUCTS

2.01 SEALANTS

A. Silicone Sealant: Silicone Sealant (use at concrete, masonry, or glazing applications): FS TT S 01543, Class A, low modulus type; Spectrum I as manufactured by Tremco, Inc.

B. Interior Building Sealant: Acrylic-emulsion; one-part, non-sag, mildew-resistant. Complying with ASTM C834-17(2023), formulated to be paintable; Pecora Corp. "AC-20", Sonneborn "Sonolac", Tremco Inc. "Tremco Acrylic Latex 834" or approved equal.

C. Sanitary Sealant: One-part mildew-resistant silicone; ASTM C920-18(2024) Type S; Grade NS Class 25; Uses NT, G, A and O; formulated with fungicide for sealing interior joints with nonporous substrates around ceramic file, showers, sinks and plumbing fixtures; Dow Corning Corp. "786 Mildew Resistant", or approved equal.

D. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, non-skinning, non-staining, gun-able, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound; Pecora Corp. "BA-98", Tremco Inc. "Tremco Acoustical Sealant" or approved equal.

E. Acoustical Sealant for Exposed Joints: Nonoxidizing, skin-able, paintable, gun-able sealant recommended for sealing interior exposed joints to reduce transmission of airborne sound; Pecora Corp. "AC-20", USG "Sheetrock Acoustical Sealant" or approved equal.

F. Concrete Expansion Joints: Joint sealing material shall be a two-component, self-leveling, polyurethane elastomeric sealant. Product shall be Sikaflex 2cSL as manufactured Sika Corporation, or equal. Color shall be chosen from the full range of manufacturer's standard colors.

G. Vertical Building Expansion Joints: Joint sealing material shall be a one-component, polyurethane-based non-sag elastomeric sealant. Product shall be Sikaflex Construction Sealant as manufactured

Sika Corporation, Pecora Corp. “DynaTrol II” or approved equal. Color shall be chosen from the full range of manufacturer’s standard colors.

H. Sheet Metal Flashings, Trims, Gutters, & Joints: Joint sealing material shall be a two-component, self-leveling, polyurethane elastomeric sealant. Product shall be Sikaflex 2cSL as manufactured Sika Corporation, or equal. Color shall be chosen from the full range of manufacturer’s standard colors. Provide Sikaflex 260 Primer at all stainless steel and/or galvanized substrate location for proper adhesion of Sikaflex 2cSL.

I. Substitutions: Under provisions of Section 01 33 00.

J. Color of sealant shall be as selected by Architect.

2.03 ACCESSORIES

A. Primer: Non staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Noncorrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Non-staining; compatible with sealant and primer; such as round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width. Materials impregnated with oil, bitumen or similar materials shall not be used. Sealant shall not adhere to back-up material.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Solvents: cleaning agents or other accessory materials shall be as recommended by the sealant manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.

B. Beginning of installation means installer accepts existing surfaces.

3.02 PREPARATION

A. Clean and prime joints in accordance with manufacturer's instructions.

B. Remove loose materials and foreign matter which might impair adhesion of sealant.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with sealant manufacturer's recommendations.

E. Protect elements surrounding the work of this Section from damage or disfiguration.

F. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or acid washing to produce a clean, sound substrate. Remove loose particles remaining from cleaning operations by vacuuming or blowing out joints.

G. Clean metal, glass, glazed surfaces of ceramic tile and other non-porous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealants.

3.03 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions.

B. Caulk all exterior joints and openings in the building envelope that are observable sources of air infiltration.

C. Measure joint dimensions and size materials to achieve required width/depth ratios.

D. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width. Roll the material into the joint to avoid lengthwise stretching. Do not twist or braid rod stock.

E. Install bond breaker where joint backing is not used.

F. Prime surfaces to receive joint sealant with primer recommended by sealant manufacturer.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges. Apply masking tape where required to protect adjacent surfaces from sealant application.

H. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

I. Tool joints concave.

J. At all surface-mounted light fixtures mounted on gypsum board ceilings, contractor shall caulk light fixture body to ceiling finish to eliminate gap between metal body and fixture. Coordinate locations with drawings.

3.04 CLEANING AND REPAIRING

A. Clean work under provisions of Section 01 77 00.

B. Clean adjacent soiled surfaces. Use a solvent or cleaning agent as recommended by the sealant manufacturer.

C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 01 66 00.

B. Protect sealants until cured.

C. Do not paint sealants until sealant is fully cured.

D. Do not paint silicone sealant.

END OF SECTION

SECTION 09 68 00

CARPET

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Broadloom and carpet tile.
2. Integrated walk-off mats
3. Base finish and accessories
4. Subfloor testing and preparation.
5. Installation of vapor retarder.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 00 72 00: Exhibit C: Abatement of Hazardous Materials.
3. Section 03 31 00: Structural Concrete (for floor flatness and floor levelness).
4. Section 07 26 00: Vapor Retarders
5. Section 09 21 16: Gypsum Board Systems: Wall materials to receive base.
6. Section 09 65 00: Resilient Flooring.

1.02 REFERENCES

A. ANSI/ASTM E648-25 - Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

B. ASTM F1869-23 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

1.03 QUALITY ASSURANCE

A. Manufacturer, Contractor, and Installer Qualifications:

1. Manufacturer: Company specializing in contract flooring with ten years minimum experience.
2. Flooring Contractor: Company with five years' minimum documented experience, approved by manufacturer for the installation of the specified products and shall have access to all manufacturers required technical, maintenance, specifications and related documents.
3. Installer:
   a. Floor covering installer must be factory trained and certified for the installation of the specific products being installed.

b. Installer to provide project inspector proof of certification prior to starting work.
c. Certified installer must be present on job site while work is in progress.

4. Testing Laboratory:
   a. Certified, bonded, qualified and experienced agency to perform pH and Relative Humidity (RH) emission tests.

B. Pre-Floor Covering Installation Meeting:

1. Contactor to notify Construction Manager with a minimum of 5-days' notice when anticipated to be ready for pre-floor covering installation meeting. (After subfloor preparation is complete and ready for floor covering installation.)
2. Contractor, installer, and manufacturer representative are required to attend pre-floor covering meeting. Contractor is responsible for coordinating and scheduling their attendance.
3. Construction Manager will schedule meeting with Contractor team, Project Inspector, and Architect.
4. Purpose of Meeting: To review subfloor preparation, verification of readiness for floor covering installation and use of correct products, verification of the acclamation of correct finish materials and review installation requirements.

C. Manufacturer's Field Services:

1. Manufacturer representative to attend the "Pre-Flooring" meeting.
2. Upon Owner or Architect's request, and with at least 72-hour notice, provide manufacturer's representative site visit(s) for inspection of product installation.
3. At the Owner's request, manufacturer representative to attend operation and maintenance training meeting for Owner's custodial staff prior to acceptance of floor covering installation.

1.04 SUBMITTALS

A. Provide a complete submittal package with all components required within this section. Submit per Section 01 33 00.

1. Product Data: Provide product data describing physical and performance characteristics, sizes, patterns, colors, material safety data sheets, and method of seaming and manufacture's installation instructions for all proposed products.

2. Shop Drawings:
   a. Provide a floor plan indicating all proposed seam locations and integrated walk-off mats. Indicate method of joining seams, and direction of carpet.

3. Samples:
   a. Submit samples for color selection illustrating color and pattern for floor material with samples of matching walk-off mats, rubber base and transition material proposed for installation.
   b. Submit sample of solvent welded seam.

4. Maintenance Data: Submit manufacturers recommend cleaning and maintenance data. Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
5. Recycled Content Percentage Submittals
6. Submit a statement signed by the manufacturer's Executive Officer or independent certification third-party that the provided carpet materials have the specified recycled material percentage.
7. Submit documentation of manufacturer's take-back program for carpet. Including:
   a. Confirmation that the new carpet being installed will be accepted (at the point of future replacement) through a manufacturer's operated program for recycling or reuse;
   b. Written description of such a process for the recycling and/or recovery of used/worn products;
   c. Contact information for the take-back program.
8. Existing Carpet Recycling Plan and Recycling Certification. Submit documentation describing the reclamation plan for existing carpet. Include appropriate contact information, overview of procedures, and limitations and conditions applicable to the project Carpet recycling options consist of:
   1. Repurposing - reusing the product in another application such as facilitating the donation of used carpeting to charities and other nonprofit organizations.
   2. Closed Loop Recycling - turning waste materials into new materials of the same value, such as vinyl backing into vinyl backing and nylon yarn into nylon carpet yarn.
   3. Open Loop Recycling – creating other product types from reclaimed carpet. For example, turning nylon face fiber into automotive parts or carpet padding, including nylon face fiber in recycled backings
   4. Waste-to-Energy - using carpet for waste-to-energy. In the case of waste-to-energy, manufacturer shall justify why carpet cannot be recycled as this method should be a last resort.
   5. Landfill or incineration – are not approved disposal methods
   6. At the completion of the project, a certificate shall be furnished verifying the reclamation of the carpet and the pounds of material diverted from the landfill.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data under provisions of Section 01 33 00.

B. Include maintenance procedures, recommended maintenance materials, and suggested schedule and products for cleaning.

C. Provide in-service training with Owner's custodial staff prior to acceptance of flooring for proper care and maintenance of carpet. Also review and provide recommended type of furniture casters and glides.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected for exposure to harmful weather conditions and at a temperature and humidity conditions recommended by manufacturer. Materials should be stored in areas that are fully enclosed, weather tight with the permanent HVAC system set at a uniform temperature of at least 68 degrees F (20 degrees C) for 72 hours prior to, during and after installation.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Store materials for three days prior to installation in area of installation to achieve temperature stability.

B. Maintain minimum 70 F ambient temperature at floor level three days prior to, during, and 24 hours after installation of materials.

C. Prior to testing for moisture vapor emission rate, space shall be enclosed, fully weather-tight, wet-work in space shall be completed and nominally dry, work above ceilings finished. The test site should be at the same temperature and humidity expected during normal use.

D. Maintain lighting at a minimum uniform level of 50 or more-foot candles in areas where the floor system is being installed.

E. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

F. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weather tight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants.

G. Floor temperature should be 60 °F minimum for proper adhesive curing and performance.

H. If subfloor is contaminated with an oily residue either from removal of “cutback” during asbestos abatement or from a previous end use such as metal fabrication, this residue MUST be totally removed or covered prior to applying modular adhesive and carpet.

1.08 CONCRETE SUBFLOOR TESTING

A. Testing for internal relative humidity of concrete slabs must be conducted in accordance with the current version of ASTM F2170-19a, not to exceed manufacturer’s requirements (ASTM F2170-19a – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes).

B. The Flooring Contractor shall verify in writing to the Owner, a minimum of thirty (30) days prior to scheduled carpet installation, the following substrate conditions:

1. Moisture: Initial emission rate, as tested with in-situ probes, per ASTM F2170-19a.

2. Alkalinity: pH level. Testing the pH at the surface of a concrete slab must be conducted in accordance with the current version of ASTM F710, not to exceed manufacturer's requirements (ASTM F710-19a – Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.)

C. High Moisture and /or Alkalinity Readings:

1. New Construction (New Concrete Slab)
   a. If the Contractor's test results indicate that the slab relative humidity (RH) readings are below those of flooring manufacturer's requirement, then the Owner's representative will initiate independent testing to confirm results and will initiate additional testing using petrographic analysis to determine if the Water Cement Ratio and sufficient hydration has taken place.
      1) If it is determined that the Specifications were followed in their entirety, water/cement ratio (as specified), and or the concrete surface has been adequately hydrated; then the Contractor shall initiate a credit to the Owner for the cost of installation of the Vapor Retarders as specified in section 07 26 00 that were not installed.

2. Modernization Construction (Existing Concrete Slab)
   a. If the Contractor's test results indicate that the slab relative humidity (RH) readings are below those of flooring manufacturer's requirement, then the Owner's representative will initiate independent testing to confirm results.
      1) If the independent test results do not substantiate the Contractor's findings, then the Contractor will be directed to proceed with the Vapor Retarder installation and the retesting cost will be back charged to the contractor.
      2) If the independent test results confirm the Contractor's findings, then the Contractor shall initiate a credit to the Owner for the cost of installation of the Vapor Retarders as specified in section 07 26 00 that were not installed.

D. Comply with manufacturer's written requisites for field conditions including but not limited to testing for moisture, confirmation of vapor retarder, floor prep, bond test, photo documentation, etc.

1.09 EXTRA MATERIALS

A. Provide a minimum of 4 square yards of each color installed. In addition, provide all usable scraps one sq. yd. or larger in size. Remnants shall be packaged, identified and delivered to the Owners' Representative, who will retain any he chooses for future repairs before they are removed from the job site.

B. Provide a minimum of 10 lineal feet of base and transition pieces of each material and color specified or 2 % whichever is greater.

1.10 WARRANTY

A. Manufacturer's Warranty: Twenty (20) year minimum manufacturer warranty commencing on recordation date of the Notice of Completion.

1. Should carpet, tend to creep, bulge, be defective in manufacturing, or show a substantial amount of wear - carpet shall be replaced with new carpeting at no cost to the Owner. Manufacturer to submit written warranty covering the following:
   a. 20 Year minimum, non-prorated Guarantee shall also include:
      1) No resiliency loss of backing.
      2) No zippering.
      3) Static protection (will not lose static property—will not give static discharge above 3.5KV).
      4) No edge ravel or zippering.
      5) Delamination.
      6) Surface wear (maintains at least 90% surface pile weight).
      7) No staining.
      8) Dimensional Stability.
      9) Moisture Resistance.

PART 2 – PRODUCTS

2.01 MATERIALS

DESIGNERS!! Carpet selection shall be per project. Coordinate with District.

A. Carpet (Vinyl Cushioned Tufted Textile) and integrated walk-off mats: Color as selected by Owner Representative from Manufacturer's standard range. No other substitutions will be allowed.

1. Tarkett Commercial – Hybrid resilient sheet flooring
   a. "Aftermath II" Series, 6'-0" roll, glue down. Powerbond cushion RS vinyl backing system and seam sealer.
   b. Or Equal.

2. Milliken Commercial – Broadloom Roll
   a. "Formwork", 13'-6" roll, glue down. Endura-Loc backing system.

3. Tarkett Commercial – Carpet Tiles
   a. "Aftermath II" Series, 24"x24" tile, glue down. Flex Aire cushion backing system.
   b. Or Equal.

4. Milliken Commercial – Carpet Tiles
   a. "Journal Line By Line", 50cm x 50cm, glue down. PVC-Free WellBac Comfort Cushion.

5. Tarkett Commercial – Walk-off System to match carpet backing at specified locations
   a. "Abrasive Action II" walk-off system Powerbond Cushion RS or 24"x24" Flex Aire cushion tile, at all exterior doors in carpeted rooms. Color to be coordinated with carpet color selection.

6. Milliken Commercial – Entrance Flooring
   a. "OBEX Tiles" carpet entryway system at all exterior doors in carpeted rooms. Color to be coordinated with carpet color selection.

B. Rubber Wall Base: Cove style, conforming to ASTM F 1861 or FS-SS-W-40, Type 1. New Construction - 4” high and 1/8-inch (3.2mm) gauge. Modernization-type projects and new construction cafeteria spaces - 6” high and 1/8-inch (3.2mm) gauge. No manufactured corners.

1. Burke Industries.
2. Armstrong.
3. Musson Rubber Co.
4. Roppe Rubber Corp.
5. Approved equal.

C. Resilient Edge and Adapter/Transition Strips: 1/8-inch-thick, tapered or bullnose, minimum of 1 inch wide.

1. Roppe
2. Johnsonite
3. Flexco Floors
4. Approved equal.

D. Leveling and Patching Compounds:

1. Portland cement-based patch recommended by carpet manufacturer. Install as recommended by manufacturer for specific application.

E. Primer:

1. Tarkett Commercial: C-36E primer.
2. Milliken: None required.

F. Adhesives: Low VOC, waterproof, and as recommended by product manufacturer.

1. Tarkett “RS” pre applied microencapsulated tackifier.
2. Tarkett Commercial: C-16E Powerbond Adhesive.
3. Milliken: Mosaic Moisture XT Spray.

PART 3 – EXECUTION

3.01 EXAMINATION

A. New Construction (New Concrete Slab)

1. Installer must examine areas and conditions under which resilient flooring and accessories are to be installed and must notify General Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Owner and Architect.
2. Testing for internal relative humidity of concrete slabs must be conducted in accordance with the current version of ASTM F2170-19a, not to exceed manufacturer’s requirements (ASTM

F2170-19a– Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes).

3. Verify that new surfaces are smooth and flat with maximum variation as specified in 03 31 00-Structural Concrete and are ready to receive work.
4. Beginning of installation on new substrates means acceptance of substrate. The existing substrates will require as much preparation as necessary to provide proper installation of new materials.

B. Modernization Construction (Existing Concrete Slab)

1. If existing flooring was determined to be asbestos containing and required abatement, verify that the abatement work has been accepted by the Owner's representative prior to commencing work.
2. Testing for internal relative humidity of concrete slabs must be conducted in accordance with the current version of ASTM F2170-19a, not to exceed manufacturer's requirements (ASTM F2170-19a – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes).

3.02 PREPARATION

A. New Construction (New Concrete Slab)

1. Install underlayment where flooring is being installed on a wooden subfloor per the manufacturer's instructions.
2. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with manufacturer recommended subfloor filler.
3. Apply, trowel, and float filler to leave a smooth, flat, hard surface.
4. Prohibit traffic from area until filler is cured.
5. Prepare floor substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as dirt, paint, grease, oils, solvent, curing and hardening compounds, sealers, asphalt and old adhesive residue. Vacuum clean substrate.
6. Apply primer to concrete surfaces.

B. Modernization Construction (Existing Concrete Slab)

1. Remove existing finishes, adhesives, and other materials as necessary to properly prepare existing substrates. (Refer to asbestos abatement procedures.)
2. Install underlayment where flooring is being installed on a wooden subfloor per the manufacturer's instructions.
3. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
4. Fill low spots, cracks, joints, holes and other defects with filler prior to flooring installation.
5. Apply, trowel, and float filler to leave a smooth, flat, hard surface.
6. Prohibit traffic from area until filler is cured.
7. Prepare floor substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as dirt, paint, grease, oils, solvent, curing and hardening compounds, sealers, asphalt and old adhesive residue. Vacuum clean substrate.

8. Apply primer to concrete surfaces.

3.03 CARPET INSTALLATION

A. Install in accordance with manufacturers' instructions and recommendations with fully welded seams.

B. Install flooring square with room axis and in accordance with approved shop drawing.

C. Layout roll-goods in a manner to minimize seams and avoid seams in traffic areas. End butt joints shall be kept to a minimum, shall be staggered, and shall occur where approved on detail plan layout. Use the largest sections possible to minimize seams. Avoid cross seams, filler pieces and strips. Match edges for color shading and pattern at the seams in compliance with the manufacturer recommendations.

D. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.

E. Scribe, cut, fit flooring to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture, including pipes, outlets, edgings, thresholds, nosing and cabinets.

F. Install edge strips at unprotected or exposed edges, and where flooring terminates.

G. Install flooring on covers for telephone and electrical ducts, and similar items occurring within finish floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.

H. Adhere carpet to prepared substrate without producing open cracks, voids, raising and puckering at joints, telegraphing to adhesive spreader marks, or other surface imperfections in completed installation.

I. Fully solvent weld all seams. Seams shall be unnoticeable in finished installation.

J. Verify carpet match before cutting to ensure minimal variation between dye lots.

K. Double cut carpet, to allow intended seam and pattern match. Make cuts straight, true, and unfrayed.

L. Lay carpet on floors with run of pile in same direction as anticipated traffic.

M. Do not change run of pile in any room where carpet is continuous through a wall opening into another room. Locate change of color or pattern between rooms under door centerline.

N. Complete installation shall conform to the Carpet Installation Standard of Carpet and Rug Institute (CRI).

3.03 INTEGRATED WALK-OFF MAT INSTALLATION

A. Install in accordance with manufacturers' instructions and recommendations.

B. Install modular tile like any “dry-back” modular with a full-spread wet adhesive.

C. Installation instructions for Tarkett Commercial’s Powerbond Non-RS (dry-back) Modules can be used as “reference only.”

D. Adhesives below are offered to install modular tile product based upon application and intended use:

1. C-EX - Pressure Sensitive Releasable Adhesive as required by manufacturer
2. Milliken Mosaic XT.

E. Modular tile should be securely attached to the sub-floor in compliance with ADA Accessibility Guidelines, latest edition, for Building & Facilities, Section 4.5.3.

F. Provide integrated walk-off mats at all exterior door location where carpet is indicated to be installed. The walk-off mats shall extend a minimum of the door width plus six inches (6”) and six feet (6’-0”) in the direction of travel or as indicated on the drawings.

3.04 INSTALLATION - BASE MATERIAL

A. Install resilient wall base on entire wall perimeter including toe spaces and open ends of cabinets. Set all bases in adhesive as recommended by the manufacturer. All joints in bases shall be plumb, flush, tight and inconspicuous. Seat top edge and back of base firmly against the wall. Wrap base around all outside corners and no seams within 12” of corners. Interior corners shall be mitered and tightly fitted.

3.05 PROTECTION

A. Prohibit traffic from carpet areas for 24 hours after installation.

B. Protect flooring from damages by other trades prior to owner occupancy.

3.06 FINAL CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage. Remove and dispose of all small scraps, cartons, and rubbish upon completion of the work. Remove all loose threads with sharp scissors.

B. Clean carpet of all spots with proper spot remover, and vacuum carpet surfaces.

END OF SECTION

SECTION 09 91 00

PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation and field painting of exposed interior items and surfaces, including mechanical and electrical equipment that do not have a factory-applied finish.

1.2 RELATED SECTIONS

A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

B. Section 05 50 00 - Metal Fabrications: Shop priming ferrous metal.

C. Section 08 11 00 - Steel Doors and Frames: Factory priming steel doors and frames.

D. Section 09 29 00.10 - Gypsum Board Assemblies: Surface preparation of gypsum board.

E. Division 23: Mechanical.

F. Division 26: Electrical.

1.3 REFERENCES

A. ASTM International (ASTM): ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

B. Steel Structures Painting Council (SSPC) SP6 - Commercial Blast Cleaning Procedures.

C. Steel Structures Painting Council (SSPC) SP10 - Near White Blast Cleaning Procedure.

1.4 DEFINITIONS

A. General: Standard coating terms defined within Masters Painters Institute (MPI) manual.
   1. Gloss level 1 - Flat with a gloss range below 5 when measured at a 60-degree meter and 10 when measured at an 85-degree meter.
   2. Gloss level 2 - Low Sheen with a gloss range of 5 to 10 when measured at a 60 degree meter and 10 to 35 when measured at an 85 degree meter.
   3. Gloss level 3 - Eggshell with a gloss range between 10 and 15 when measured at a 60-degree meter and 10 to 35 when measured at an 85-degree meter.
   4. Gloss level 4 - Satin with a gloss range between 25 to 35 when measured with a 60 degree meter.
   5. Gloss level 5 - Semi-Gloss with a gloss range between 50 and 55 when measured at a 60

degree meter.
6. Gloss level 6 - Gloss with a gloss range more than 70 when measured at a 60 degree meter.

1.5 SUBMITTALS

A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Preparation instructions and recommendations.
3. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

E. At project completion, provide floorplans and elevations denoting all colors used on project with descriptive notations for color and sheen. Each paint color shall be labeled P1, P2, P3, etc. Provide a legend identifying all paint colors. Legend shall also match the final draw downs of each color.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

C. Paint Exposed Surfaces: If an item or a surface is not specifically mentioned, paint the item, or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship, color, and sheen are approved

by Architect.

3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label:

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain storage containers in a clean condition, free of foreign materials and residue.

C. 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.

D. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F (10 and 32 deg C), unless manufacturer's instructions specifically states.

E. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F (7 and 35 deg C).

F. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

A. Provide three(3) sets of draw downs of all final colors used on project. Label draw downs according to finish plans.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Dunn Edwards Paints.

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 PAINT MATERIALS – GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. VOC Classification: Provide materials, including primers, undercoats, and finish-coat materials, which meet local air quality management district regulations.

C. Color: Refer to Finish Schedule and Paint Legend for paint colors.

D. Application Rate: Coating thickness for primer, intermediate, barrier and finish coats shall be measured as Dry Film Thickness (DFT) and comply with manufacturer's published recommendations.

2.3 Interior Paint Systems

A. Gypsum and Plaster Walls:
1. Prime Coat: DE Ultra – Grip Acrylic Premium Primer
2. 2nd Coat: DE Spartawall Acrylic Low VOC Eggshell Enamel
3. 3rd Coat: DE Spartawall Acrylic Low VOC Eggshell Enamel

B. Suspended and Surface applied Ceilings:
1. Prime Coat: DE Ultra – Grip Acrylic Premium Primer
2. 2nd Coat: DE Ceiling Paint Flat Finish
3. 3rd Coat: DE Ceiling Paint Flat Finish

C. Wood Doors & Frames (Painted Finish):
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

D. Previously Painted Wood:
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

E. Wood Previously Stained to be Painted:
1. Prime Coat: DE Ultra – Grip Acrylic Premium Primer
2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

F. Wood to be re-finished and sealed:
1. 2 Coats: Old Masters Master Armor Satin Finish

G. Metal Doors and Frames:
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

H. Vinyl Tackable wall Panels:
1. Prime Coat: Zinsser B-I-N Shellac Base Primer
2. 2nd Coat: DE Spartawall Acrylic Low VOC Eggshell Enamel
3. 3rd Coat: DE Spartawall Acrylic Low VOC Eggshell Enamel

2.4 Exterior Paint Systems

A. Concrete Substrates, Masonry, Stucco, Non-Traffic Surfaces:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish
   3. 3rd Coat: DE Spartashield100% Acrylic Exterior Eggshell Finish

B. Wood Siding:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish
   3. 3rd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish

C. Wood Fascia:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Spartashield 100% Acrylic Exterior Semi-Gloss Finish
   3. 3rd Coat: DE Spartashield 100% Acrylic Exterior Semi-Gloss Finish

D. Wood Benches:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
   3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

E. Interior & Exterior Surfaces of Exterior Doors:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
   3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

F. Door Mullions at Pair Doors:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
   3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

G. Painted Infill Panels at window Locations:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
   3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

H. Ferrous Metal Substrates:
   1. Prime Coat: DE Enduraprime High Performance Acrylic Metal Primer
   2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
   3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

I. Metal Handrails, Guardrails, Barricade Rails & Fencing:
   1. Prime Coat: For Ferrous Metal- DE Enduraprime High Performance Acrylic Metal Primer and for Galvanized Metal – DE Enduraprime Galvanized Metal Primer
   2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel
   3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Enamel

J. Metal Panels Fascia:
   1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
   2. 2nd Coat DE Spartashield 100% Acrylic Exterior Semi-Gloss Finish
   3. 3rd Coat: DE Spartashield 100% Acrylic Exterior Semi-Gloss Finish

K. Metal Gates:
1. Primer Coat: DE Enduraprime High Performance Acrylic Metal Primer
2. 2nd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Finish
3. 3rd Coat: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss Finish

L. Gutters, downspouts, Cap & Edge Flashings.
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Spartashield100% Acrylic Semi-Gloss Finish
3. 3rd Coat: DE Spartashield 100% Acrylic Semi-Gloss Finish

M. Canopies Including Undersides:
1. Prime Coat: For Ferrous Metal- DE Enduraprime High Performance Acrylic Metal Primer or for Galvanized Metal DE Enduraprime Galvanized Metal Primer
2. 2nd Coat: DE Enduracoat High Performance Semi-Gloss Finish
3. 3rd Coat: DE Enduracoat High Performance Semi-Gloss Finish

N. Extended Roof Overhangs and Covered Walks Including Undersides:
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish
3. 3rd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish

O. Flag Poles:
1. Prime Coat: DE Enduraprime High Performance Acrylic Metal Primer or for Galvanized Metal DE Ultrashield Galvanized Primer
2. 2nd Coat: DE Enduracoat Hgh Performance Semi-Gloss Finish
3. 3rd Coat: DE Enduracoat High Performance Semi-Gloss Finish

P. Relocatable Classroom Buildings and Skirts:
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish
3. 3rd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish

Q. Relocatable Building Ramp Skirts & Handrails:
1. Prime Coat: DE Ultra-Grip Acrylic Premium Primer
2. 2nd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish
3. 3rd Coat: DE Spartashield 100% Acrylic Exterior Eggshell Finish
4. Handrails: 2 Coats: DE Aristoshield Water Based Urethane Alkyd Semi-Gloss

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.

C. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on

characteristics of finish materials to ensure use of compatible primers.

1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
2. If a potential incompatibility of primers applied by others exists, obtain the following from the primer Applicator before proceeding:
   a. Confirmation of primer's suitability for expected service conditions.
   b. Confirmation of primer's ability to be top coated with materials specified.

D. All murals that are to remain in place, protect murals from extensive cleaning. Fully tape/mask murals during priming/painting adjacent wall surfaces.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
   1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
   1. Provide barrier coats over incompatible primers or remove and reprime.
   2. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
   3. Cementitious Substrates: Prepare concrete, brick, concrete masonry block, and cement plaster surfaces to be coated. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to dull surfaces. If hardeners or sealers have been used to improve curing, use mechanical methods to prepare surfaces.
      a. Use abrasive blast-cleaning methods if recommended by coating manufacturer.
      b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not coat surfaces if moisture content exceeds that permitted in manufacturer's written instructions.

   4. Wood Substrates: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Smoothly sand surfaces exposed to view and dust off.
      a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer, before applying primer.
      b. Immediately on delivery, prime edges, ends, faces, undersides, and backsides of wood to be coated.
      c. After priming, fill holes and imperfections in the finish surfaces with putty or plastic

wood filler. Sand smooth when dried.

d. Determine moisture content of surfaces by performing a moisture test. Do not coat if moisture content exceeds 15 percent.

5. Ferrous-Metal Substrates: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC recommendations.
   a. Blast-clean steel surfaces as recommended by coating manufacturer and according to SSPC-SP 10.
   b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
   c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, solvent clean, and touch up with same primer as the shop coat.

6. Nonferrous-Metal Substrates: Clean nonferrous and galvanized surfaces according to manufacturer's written instructions for the type of service, metal substrate, and application required.
   a. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's written instructions.
   1. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.
   2. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
   3. Use only the type of thinners approved by manufacturer and only within recommended limits.
   4. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

B. General: Apply high-performance coatings according to manufacturer's written instructions.
   1. Use applicators and techniques best suited for the material being applied.
   2. Do not apply high-performance coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.
   3. Coating surface treatments, and finishes are indicated in the coating system descriptions.
   4. Provide finish coats compatible with primers used.
   5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures,

convector covers, grilles, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

C. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
   1. The number of coats and film thickness required is the same regardless of application method.
   2. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

3.4 FIELD QUALITY CONTROL

A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
   1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
   2. Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove non-complying paint from Project site, pay for testing, and repaint surfaces previously coated with the non-complying paint. If necessary, Contractor may be required to remove non-complying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

A. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing, or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

C. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces.

END OF SECTION

SECTION 10 14 00

SIGNAGE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Plastic signs at building entrances, classrooms, restrooms, and as identified on drawings.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 08 11 00 – Metal Doors.
3. Section 08 14 00 – Wood Doors.
4. Section 09 29 00 – Gypsum Board.

1.02 REFERENCES

A. Accessible signs shall conform with the following requirements as indicated:

1. California Building Code (CBC) Title 24, 2025 Edition.
2. ADA Accessibility Guidelines (ADAAG, latest adopted edition).
3. Contracted Grade 2 Braille shall be used whenever Braille symbols are specifically required (CBC Section 11B-703.3 Braille).
4. Means of Egress Identification: CBC 11B-216.4 &11B-703.1.
5. Tactile Exit Signs: CBC 1013.4.
6. Restroom Identification Symbols: CBC 11B-216.8 &11B-703.7.2.6.
7. Signs and Identification: CBC 11B-216.1 &11B-703.1.
8. International Symbol of Accessibility: CBC 11B-703.7.2.1.
9. Direction and Information Signs: CBC 11B-703.1.
10. Symbols of Accessibility: CBC 11B-703.7.
11. Finish and Contrast: CBC 11B-703.5.1.
12. Character Proportions: CBC 11B-703.2.4.
13. Character Height: CBC 11B-703.2.5.
14. Raised Characters and Pictorial Symbol Signs: CBC 11B-703.2 & 11B-703.6.
15. Braille: CBC 11B-703.3.
16. Mounting Height and Location: CBC 11B-703.4.1 & 11B-703.4.2.
17. Symbols of Accessibility: CBC 11B-703.7.2.
18. Color of Symbol: CBC 11B-703.7.2.1.
19. Entrance Signs: CBC 11B-216.6.

B. ASTM D4802-16(2024) - Standard Specification for Poly(Methyl Methacrylate) Acrylic Plastic Sheet.

C. ASTM B209-21a - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

D. ASTM B221-21 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

E. ASTM A666-24 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless-Steel Sheet, Strip, Plate, and Flat Bar.

1.03 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Shop drawings listing sign styles, lettering and locations and overall dimensions of each sign.

B. Two (2) samples illustrating full size sample sign with tactile characters, Braille and subsurface text or pictogram to demonstrate fabrication technique and Braille measurements which shall be used on proposed project.

C. Letters samples: 1-inch-high letters for proportions required in REGULATORY REQUIREMENTS.

D. Submit manufacturer’s technical data and installation for each type of sign required.

E. Submit samples of background colors, character colors, and one-inch high print outs of "I," "O" and "X" from proposed type styles. Indicate which type styles shall be used for required tactile characters and for required visual characters.

F. Submit proposed sign schedule to comply with scoping requirements above.

G. All signage shall be designed and constructed to comply with signage specifications and drawings.

1.04 QUALITY ASSURANCE

A. Pre-installation Meeting

1. Notify Architect when signs are ready for installation. Arrange for conference at job site. Do not proceed with installation until Architect's approval of specific locations and methods of attachment has been obtained.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site and protect from damage. Store until immediately prior to Notice of Completion.

B. Manufacturers shall submit 3 references showing products for projects completed within the last 6 years. Both tactile and non-tactile signage shall be included in the work.

C. Manufacture's Two-Year Warranties.

D. Contractor shall provide labor and materials to repair or replace defective signs as directed by Owner. Defects shall include:

1. Tactile characters and/or Braille dots which come off or are removed.
2. Discoloration, wear and scratching off of the surface color.
3 All signs and sign components, except for damage by mishandling by Owner, including installation by Owner, or vandalism.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products of following manufacturers form basis for design and quality intended.

1. Gravotech. www.gravotech.com
2. Or approved equal with direct compatibility with District-owned Gravotech engraving equipment and surplus engraving materials for sign types specified as "Modular".

2.02 MATERIALS

A. Modular Acrylic Framed Signs:
1. Modular sign panels mounted in permanently fixed frames with sign panels capable of being removed and replaced.
2. ADA Tactile and Braille Signs: Sand-Carved signs; thermosetting high-pressure laminate using Graphic Process Sand-Carved signs, exterior-grade, graphics, Braille and tactile copy required. Square corners, square cut edges, matt finish using **Gravotac** sheet engraving materials as manufactured by Gravotech.
   a. Frame: Single-piece, square-edge modular plastic frames with concealed screw mounting by Gravotech. Color as selected by Architect at time of submittal.
   b. ADA TactManufacturer's standard process for producing copy complying with CBC and ADA Accessibility Guidelines. Text shall be accompanied by California Grade 2 Braille. Produce precisely formed characters with square cut edges free from burrs and cut marks, permanently fused to substrate.
   c. Raised-Copy Thickness: Not less than 1/32 inch.

B. Non-Tactile, Non-Modular Signs:
1. Cast Acrylic Plastic Sheet; ASTM D4802-16(20240) Category A-1, ¼ inch overall thickness, laminated acrylic plastic sheets, sub-surface screened process graphics and symbols, exterior-grade at exterior locations, square 3/8-inch radius corners, square cut edge, drilled holes for countersunk screws, polished edges.
   a. Unframed Signs

2. Apply UV inhibitor overcoat for exterior signs.

C. Restroom Signage
   1. Male Restroom Signage:
      a. Doorways leading to male restrooms shall be identified by equilateral triangle 1/4 inch thick matte finished colored acrylic polymer material, with edges 12 inches long, with vertex pointing upward in contrasting color from door color. Sign shall be mounted in center of door 60 inches from finish floor to center of sign.
      b. Room shall be further identified by rectangular room identification sign 1/4 inch thick matte finished colored acrylic polymer material, 8 inch height by 6 inch length minimum unless indicated on Drawings upon which appears a male pictogram 6 inches high, and the word “MEN” immediately below on the same sign in contrasting color. Letters: 5/8 inches minimum and 2 inches maximum high in contrasting color, raised minimum 1/32 inch fully tactile, accompanied by the California Contracted Grade 2 Braille indicator immediately below. Sign shall be located on wall on latch side of door, 60 inches from finish floor to center of sign, centered horizontally within 18-inch space adjacent to latch side of door or on nearest adjacent wall.
      c. Conform to all CBC requirements, CBC 11B.703.1 and 11B-703.7.2.6.1.

   5. Female Restroom Signage:
      a. Doorways leading to female restrooms shall be identified by circle 1/4 inch thick matte finished colored acrylic polymer material, 12 inches in diameter circle in contrasting color from door color. Sign shall be mounted in center of door, 60 inches from finish floor to center of sign.
      b. Room shall be further identified by rectangular room identification sign 1/4 inch thick matte finished colored acrylic polymer material, 8-inch Height by 6-inch Length minimum unless indicated on Drawings upon which appears a female pictogram 6 inches high, and the word "WOMEN" immediately below on the same sign in contrasting color. Letters: 5/8 inches minimum and 2 inches maximum high in contrasting color, raised minimum 1/32 inch fully tactile, accompanied by the California Contracted Grade 2 Braille indicator immediately below. Sign shall be located on wall on latch side of door, 60 inches from finish floor to center of sign, centered horizontally within 18-inch space adjacent to latch side of door or on nearest adjacent wall.
      c. Conform to all CBC requirements, CBC 11B.703.1 and 11B-703.7.2.6.2.

   6. Gender Neutral Restroom:
      a. Doorways leading to unisex restrooms shall be identified by circle 1/4 inch thick matte finished colored acrylic polymer material, 12 inches in diameter with 1/4-inch-thick triangle superimposed on circle and within 12-inch diameter, total 1/2 inch thick in contrasting color from door color. Sign shall be mounted in center of door 60 inches from finish floor to center of sign. Color of triangle shall have 70 percent minimum contrast with color of circle.
      b. Room shall be further identified by rectangular room identification sign 1/4 inch thick matte finished colored acrylic polymer material, 8-inch Height by 6-inch Length minimum unless indicated on Drawings upon which appear as male and female pictograms and the word "RESTROOM" immediately below on the same sign in contrasting color. Letters: 5/8 inches minimum and 2 inches maximum high in contrasting color, raised minimum 1/32 inch fully tactile, accompanied by California Contracted Grade 2 Braille indicator immediately below, on same sign. The sign shall be located on wall on latch side of door, 60 inches from finish

floor to center of sign, centered horizontally within 18-inch space adjacent to latch side of door or on nearest adjacent wall.

c. Conform to all CBC requirement, CBC 11B.703.1 and 11B-703.7.2.6.3.

7. Restroom signs – Non-Wheelchair Accessible:
   a. Provide restroom signs with similar font, size and fabrication as accessible signs without the ISA (International Symbol of Accessible) and without tactile construction.
   b. Next to the Non-Wheelchair Accessible sign provide an additional sign same construction, with the wording: “WHEELCHAIR ACCESSIBLE RESTROOM LOCATED” with ARROW below the wording directing to the nearest location.

8. [Substitute "BOYS" or "GIRLS" where appropriate.]

D. Aluminum Signs (as needed)

1. Aluminum Sheet for Anodic Finish: Alloy 5005-H32 per ASTM B209-21a in 0.102-inch thickness.
2. Framing Members and Posts: Special extrusions Alloy 6063-T5 per ASTM B221-21.
3. Aluminum sheet with die-raised copy, anodic finish applied before fabrication. Background finish enamel applied after fabrication. Color as selected by Architect from manufacturer's standard range of colors.
4. Fabrication: Raised copy, Tactile and Braille.

E. Stainless Steel Signs (as needed)

1. Stainless-Steel Plate, Sheet, and Strip: Provide stainless-steel plate, sheet, and strip, Type 302 or Type 304, complying with ASTM A666-24.
2. Fabrication: Raised copy, Tactile and Braille.

F. Chemically Deep-etched Zinc Signs (as needed)

1. Solid metal plate: 0.125 [0.40] [0.064] [0.153] [0.250] inch thick.
2. Fabrication: Raised copy, Tactile and Braille.
3. Finish: matte [semigloss] [gloss] [exterior gloss] sheen.
4. Background: swirl-brushed [sandblast] [painted] [plated] zinc background finish.
5. Factory applied color finishes, minimum two (2) colors. Colors: As selected by Architect.
6. For Sizes and Dimensions verify with Architect.
7. [Rounded corners, 7/16-inch radius.]
8. Square edges.
9. Etch depth: 0.08 inch
10. Concealed Mounting: welded studs [drilled and tapped holes]
11. [Mounting Holes: Drilled and countersunk]>>>

2.03 FABRICATION

A. Regulatory Requirements

1. Tactile Character Type: Tactile characters on signs shall be raised 1/32-inch (0.794 mm) minimum, and shall be sans serif uppercase characters accompanied by Contracted (Grade 2) Braille. Helvetica Regular, uppercase letters only, refer to REGULATORY REQUIREMENTS for letter-proportion compliance. Italic, oblique script, highly decorative or unusual style forms not permitted. CBC Section 11B-703.2. Fabricate sign so that raised letter cannot be peeled off.
2. Character Proportions: Raised characters on signs shall be selected from fonts where the width of the uppercase letter "O" is 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
3. Tactile Character Height: Raised characters shall be a minimum of 5/8 inch (15.9 mm) and a maximum of 2 inches (51 mm) high. CBC Section 11B-703.2.5.
4. Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character. CBC Section 11B-703.2.6.
5. Character spacing measured between the two closest points of adjacent raised characters within a message. Where characters have rectangular cross sections, spacing shall be 1/8 inch minimum and four (4) times the stroke width, maximum. Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch minimum and four (4) times the stroke width maximum at the base of the cross sections, and 1/8 inch minimum and four (4) times the stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch minimum.
6. Line Spacing: 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.
7. Finish and Contrast: Characters and their background shall have a non-glare finish. Characters shall contrast with their background. Provide white characters on Navy Blue background to match District standard.
8. Braille: California (Contracted) Grade 2 Braille. Dot base diameter shall be 0.059 inch (1.5 mm) to 0.063 inch (1.6 mm). Dots shall be 0.100-inch (2.5 mm) on center in each cell with 0.300-inch (7.6 mm) space between corresponding dots in ad-jacent cells. Distance between corresponding dots from one cell directly below, 0.395 to 0.400 inch. Dots shall be raised 0.025 to 0.037 inch above the background. Braille dots shall be domed or rounded.
9. Polish all edges.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive Work.

B. Beginning of installation means installer accepts existing surfaces.

3.02 INSTALLATION

A. Install signs only after surfaces are finished, in all restrooms, in center of door, or on wall adjacent to latch side as specified herein.

B. Mounting

1. Mounting Height and Location: Signs with raised characters and Braille shall be located 48 inches minimum to the baseline of the lowest line of Braille cells and 60 inches maximum to the baseline of the highest line of raised characters above the finish floor or ground surfaces. Mounting location shall be located so that a clear space of 18 inch minimum by minimum by 18 inch minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45-degree open position. CBC Section 11B-703.4.
2. Tactile Plastic Signs: Stainless steel screws (not just adhesive), pin torx, vandal-proof screw appropriate for substrate.
3. Non-tactile Plastic Signs:
   a. Install with four (4) stainless steel countersunk flathead screws, pin torx, vandal-proof. Pre-drill holes to prevent breaking plastic, use countersunk drill bits to flush screw head with sign surface.
   b. [Install with clear silicone adhesive meeting ASTM C834-17(2023), with zero clearance between plastic and face of substrate. Double face adhesive tape not permitted].
   c. Metal Signs: Install with four (4) flathead countersunk No. 8 stainless steel vandal-proof screws at pre-drilled holes, top of screw heads shall flush with sign surface, concealed mounting.

C. Fasteners: Stainless steel screws, flat head, pin-in-head torx screws for vandal-proof and clear silicone adhesive.

D. Clean and polish.

3.03 FIELD QUALITY CONTROL

A. DSA Inspections: Signs and identifications or other information shall be field inspected after installation and approved by Division of the State Architect prior to the issuance of a final certificate of occupancy, or final approval where no certificate of occupancy is issued. The inspection shall include, but not limited to, verification that Braille dots and cells are properly spaced and the size, proportion and type of raised characters are in compliance with CBC, Section 11B-703.1.1.2.

END OF SECTION

SECTION 22 00 50

BASIC PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Electric motors.
2. Motor starters.
3. Strainers.
4. Valve boxes.
5. Gauges.
6. Thermometers.
7. Access Doors.
8. Expansion loops.
9. Flexible joints.
10. Insulation.

1.02 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. This Section is a part of each Division 22 Section.

1.03 ADDITIONAL REQUIREMENTS

A. Furnish and install any incidental work not shown or specified which is necessary to provide a complete and workable system.

B. Make all temporary connections required to maintain services during the course of this Contract without additional cost to the Owner. Notify the Owner seven days in advance before disturbing any service.

C. Plumbing work done under this contract shall not adversely affect the operation of the existing plumbing systems.

1.04 REFERENCES AND STANDARDS

A. Where material or equipment is specified to conform to referenced standards, it shall be assumed that the most recent edition of the standard in effect at the time of bid shall be used.

1. CSA – Canadian Standards Association International.
2. ANSI - American National Standards Institute.
3. ASTM - American Society for Testing and Materials.
4. CCR - California Code of Regulations.

a. Title 8 - Division of Industrial Safety, Subchapter 7; General Industry Safety Orders, Articles 31 through 36.

5. NCPWB - National Certified Pipe Welding Bureau.
6. CEC - California Electrical Code.
7. NEMA - National Electrical Manufacturers' Association.
8. NFPA - National Fire Protection Association.
9. OSHA - Occupational Safety and Health Act.
10. UL - Underwriters' Laboratories, Inc.

B. Requirements of Regulatory Agencies:

1. The publications listed below form part of this specification; comply with provisions of these publications except as otherwise shown or specified.

a. California Building Code, 2025.
b. California Electrical Code, 2025.
c. California Energy Code, 2025.
d. California Fire Code, 2025.
e. California Green Building Standards Code, 2025.
f. California Mechanical Code, 2025.
g. California Plumbing Code, 2025.
h. California Code of Regulations, Title 24.
i. California Health and Safety Code.
j. CAL-OSHA.
k. California State Fire Marshal, Title 19 CCR.
l. National Fire Protection Association.
m. Occupational Safety and Health Administration.
n. Other applicable state laws.

2. Nothing in Drawings or specifications shall be construed to permit work not conforming to these codes, or to requirements of authorities having jurisdiction. It is not the intent of Drawings or specifications to repeat requirements of codes except where necessary for clarity.

1.05 DRAWINGS

A. Examine Contract Documents prior to bidding of work and report discrepancies in writing to Architect.

B. Drawings showing location of equipment and materials are diagrammatic and job conditions will not always permit installation in location shown. The Plumbing Drawings show general arrangement of equipment and materials, etc., and shall be followed as closely as existing conditions, actual building construction, and work of other trades permit.

1. Architectural and Structural Drawings shall be considered part of the Work. These Drawings furnish Contractor with information relating to design and construction of the Project. Architectural Drawings take precedence over Plumbing Drawings.
2. Because of the small scale of Plumbing Drawings, not all offsets, fittings, and accessories required are shown. Investigate structural and finish conditions affecting the Work and arrange

Work accordingly. Provide offsets, fittings, and accessories required to meet conditions. Inform Architect immediately when job conditions do not permit installation of equipment and materials in the locations shown. Obtain the Architects approval prior to relocation of equipment and materials.

3. Relocate equipment and materials installed without prior approval of the Architect. Remove and relocate equipment and materials at Contactors' expense upon Architects' direction.
4. Minor changes in locations of equipment, piping, etc., from locations shown shall be made when directed by the Architect at no additional cost to the Owner providing such change is ordered before such items of work, or work directly connected to same are installed and providing no additional material is required.

C. Execute work mentioned in Specifications and not shown on Drawings, or vice versa, the same as if specifically mentioned or shown in both.

1.06 FEES AND PERMITS

A. Obtain and pay for all permits and service required in installation of this work; arrange for required inspections and secure approvals from authorities having jurisdiction. Comply with requirements of Division 01.

B. Arrange for utility connections and pay charges incurred, including excess service charges.

1. Bear the cost of construction related to utility services, from point of connection to utility services shown on Contract Documents. This includes piping, excavation, backfill, meters, boxes, check valves, backflow prevention devices, general service valves, concrete work, and the like, whether or not Work is performed by Contractor, local water/sanitation district, public utility, other governmental agencies or agencies' assigns.

C. Prior to the start of construction, contact local gas company representative and coordinate location of gas meter and piping. In addition, coordinate time required for installation, in order to avoid delay to the Project.

D. Coordination:

1. General:

a. Coordinate plumbing Work with trades covered in other Specifications Sections to provide a complete, operable and sanitary installation of the highest quality workmanship.

2. Electrical Coordination:

a. Refer to the Electrical Drawings and Specifications, Division 26, for service voltage and power feed wiring for equipment specified under this section. Contractor has full responsibility for the following items of work:

1) Review the Electrical Drawings and Division 26 Specifications to verify that electrical services provided are adequate and compatible with equipment requirements.
2) If additional electrical services are required above that indicated on Electrical Drawings and in Division 26, such as more control interlock conductors, larger feeder, or separate

120 volt control power source, include cost to furnish and install additional electrical services as part of the bid.

3) Prior to proceeding with installation of additional electrical work, submit detailed drawings indicating exact scope of additional electrical work.

3. Mechanical Coordination:

a. Arrange for pipe spaces, chases, slots and openings in building structure during progress of construction, to accommodate mechanical system installation.
b. Coordinate installation of supporting devices. Set sleeves in poured-in-place concrete and other structural components during progress of construction.
c. Coordinate requirements for access panels and doors for mechanical items requiring access where concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section “Access Doors and Frames.”
d. Coordinate with other trades equipment locations, pipe, duct and conduit runs, electrical outlets and fixtures, air inlets and outlets, and structural and architectural features. Provide information on location of piping and seismic bracing to other trades as required for a completely coordinated project.

1.07 SUBMITTALS - GENERAL

A. Refer to Division 01 Submittals Section(s) for additional requirements.

B. Submittal packages may be submitted via email as PDF electronic files, or as printed packages. PDFs shall be legible at actual size (100 percent). Provide seven copies of printed submittal packages.

C. Provide submittal of materials proposed for use as part of this Project. Product names in Specifications and on Drawings are used as standards of quality. Furnish standard items on specified equipment at no extra cost to the Contract regardless of disposition of submittal data. Other materials or methods shall not be used unless approved in writing by Architect. Architect's review will be required even though "or equal" or synonymous terms are used.

1. Partial or incomplete submittals will not be considered.
2. Quantities are Contractor's responsibility and will not be reviewed.
3. Provide materials of the same brand or manufacturer for each class of equipment or material.
4. Identify each item by manufacturer, brand, trade name, number, size, rating, or other data necessary to properly identify and review materials and equipment. Words "as specified" are not sufficient identification.
5. Identify each submittal item by reference to items’ Specification Section number and paragraph, by Drawing and detail number, and by unit tag number.
6. Organize submittals in same sequence as in Specification Sections.
7. Show physical arrangement, construction details, finishes, materials used in fabrications, provisions for piping entrance, access requirements for installation and maintenance, physical size, mechanical characteristics, foundation and support details, and weight.

a. Submit Shop Drawings, performance curves, and other pertinent data, showing size and capacity of proposed materials.
b. Specifically indicate, by drawn detail or note, that equipment complies with each specifically stated requirement of Contract Documents.

c. Drawings shall be drawn to scale and dimensioned (except schematic diagrams). Drawings may be prepared by vendor but must be submitted as instruments of Contractor, thoroughly checked and signed by Contractor before submission to Architect for review.
d. Catalog cuts and published material may be included with supplemental scaled drawings.

D. Review of submittals will be only for general conformance with design concept and general compliance with information given in Contract Documents. Review will not include quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with work of other trades, or construction safety precautions, which are sole responsibility of Contractor. Review of a component of an assembly does not indicate acceptance of an assembly. Deviations from Contract Documents not clearly identified by Contractor are Contractor's responsibility and will not be reviewed by Architect.

E. Within reasonable time after award of contract and in ample time to avoid delay of construction, submit to Architect Shop Drawings or submittals on all items of equipment and materials provided. Provide submittal in at least seven copies and in complete package.

1. Shop Drawings and submittals shall include Specification Section, Paragraph number, and Drawing unit symbol or detail number for reference. Organize submittals into booklets for each Specification section and submit in loose-leaf binders with index. Deviations from the Contract Documents shall be prominently displayed in the front of the submittal package and referenced to the applicable Contract requirement.

F. Furnish to the Project Inspector complete installation instructions on material and equipment before starting installation.

1.08 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for plumbing systems materials and products.

B. Shop Drawings.

C. Sustainable Design Submittals:

1. Product Data: For adhesives and sealants, documentation of compliance including printed statement of VOC content and chemical components.
2. Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-emitting materials.

D. Pipe, pipe or plumbing fittings, fixtures, solder and flux installed in a system providing water for human consumption shall comply with lead free requirements of the California Health and Safety Code Section 11 68 75. Provide submittal information for products third-party certified by an approved laboratory as complying with California Health and Safety Code Section 11 68 75.

1.09 INFORMATIONAL SUBMITTALS

A. Provide layouts for plumbing systems, for inclusion in coordinated layout specified in Section 23 80 00. Comply with requirements for layouts specified in Section 23 80 00.

1.10 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. Refer to Division 01 for complete instructions.
2. Furnish three complete sets of Operation and Maintenance Manual bound in hardboard binder, and one compact disc containing complete Operation and Maintenance Manual in searchable PDF format. Provide Table of Contents. Provide index tabs for each piece of equipment in binder and disc. Begin compiling data upon approval of submittals.

a. Sets shall incorporate the following:

1) Product Data.
2) Shop Drawings.
3) Record Drawings.
4) Service telephone number, address and contact person for each category of equipment or system.
5) Complete operating and maintenance instructions for each item of plumbing equipment and systems.
6) Copies of guarantees/warrantees for each item of equipment and systems.
7) Test data and system balancing reports.
8) Typewritten maintenance instructions for each item of equipment listing lubricants to be used, frequency of lubrication, inspections required, adjustment, etc.
9) Manufacturers' bulletins with parts numbers, instructions, etc., for each item of equipment.
10) Control diagrams and literature.
11) A complete list or schedule of all scheduled valves giving the number of the valve, location and the rooms or area controlled by the valve. Identify each valve with a permanently attached metal tag stamped with number to match schedule. Post list in frame under plastic on wall in mechanical room or where directed by Architect.
12) Check test and start reports for each piece of plumbing equipment provided as part of the Work.
13) Commissioning and Preliminary Operation Tests required as part of the Work.

b. Post service telephone numbers and/or addresses in an appropriate place as designated by the Architect.

B. Record Drawings:

1. Refer to Division 01, Record Documents, for requirements governing Work specified herein.
2. Upon completion of the work, deliver to Architect the following:

a. Originals of drawings showing the Work exactly as installed.

1) RFI, ASI, CCD references pasted onto contract documents or final shop drawings by the Contractor, or provided as reference, does not suffice as record of the as-built conditions. The Contractor shall document the as-built conditions showing Work exactly as installed using red-lined markups of the contract documents or final shop drawings.

b. One complete set of reproducible drawings showing the Work exactly as installed.
c. One compact disc with complete set of drawings in PDF format showing the Work exactly as installed.
d. Provide Contractor's signature, verifying accuracy of record drawings.
e. Obtain the signature of the Project Inspector for all record drawings.

1.11 SUBSTITUTIONS

A. Refer to Division 01 for complete instructions. Requirements given below are in addition to or are intended to amplify Division 01 requirements. In the case of conflict between requirements given herein and those of Division 01, Division 01 requirements shall apply.

B. It is the responsibility of Contractor to assume costs incurred because of additional work and or changes required to incorporate proposed substitute into the Project. Refer to Division 01 for complete instructions.

C. Substitutions will be interpreted to be all manufacturers other than those specifically listed in the Contract Documents by brand name, model or catalog number.

D. Only one request for substitution will be considered for each item of equipment or material.

E. Substitution requests shall include the following:

1. Reason for substitution request.
2. Complete submittal information as described herein; see "Submittals."
3. Coordinated scale layout drawings depicting position of substituted equipment in relation to other work, with required clearances for operation, maintenance and replacement.
4. List optional features required for substituted equipment to meet functional requirements of the system as indicated in Contract Documents.
5. Explanation of impact on connected utilities.
6. Explanation of impact on structural supports.

F. Installation of reviewed substitution is the Contractors' responsibility. Any mechanical, electrical, structural, or other changes required for installation of reviewed substituted equipment or material must be made by the Contractor without additional cost to the Owner. Review by the Architect of the substituted equipment or material, including dimensioned Drawings will not waive these requirements.

G. Contractor may be required to compensate the Architect for costs related to substituted equipment or material.

1.12 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of plumbing systems products, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Contractor's Qualifications: Firm with at least 5 years of successful installation experience on projects with plumbing systems work similar to that required for this Project.

C. California Health and Safety Code Compliance: For products covered under the scope of HSC 116875 for potable water service. Products for potable water service shall be third-party certified by an approved laboratory as complying with California Health and Safety Code Section 11 68 75.

D. Comply with applicable portions of California Plumbing Code pertaining to selection and installation of plumbing materials and products.

E. All materials and products shall be new and shall match existing.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Protect equipment and piping delivered to Project site from weather, humidity and temperature variations, dirt, dust and other contaminants.

1.14 FIELD CONDITIONS

A. Contractor shall visit Project site and examine existing conditions in order to become familiar with Project scope. Verify dimensions shown on Drawings at Project site. Bring discrepancies to the attention of Architect. Failure to examine Project site shall not constitute basis for claims for additional work because of lack of knowledge or location of hidden conditions that affect Project scope.

B. Information on Drawings relative to existing conditions is approximate. Deviations from Drawings necessary during progress of construction to conform to actual conditions shall be approved by the Architect and shall be made without additional cost to the Owner. The Contractor shall be held responsible for damage caused to existing services. Promptly notify the Architect if services are found which are not shown on Drawings.

1.15 WARRANTY

A. Refer to Division 01 for warranty requirements, and duration and effective date of Contractor’s Standard Guarantee.

B. Repair or replace defective work, material, or part that appears within the warranty period, including damage caused by leaks.

C. On failure to comply with the warranty requirements within a reasonable length of time after notification is given, the Architect/Owner shall have the repairs made at the Contractor's expense.

PART 2 - PRODUCTS

2.01 GENERAL

A. Materials or equipment of the same type shall be of the same brand wherever possible. All materials shall be new and in first class condition.

B. All sizes, capacities, and efficiency ratings shown are minimum, except that gas capacity is maximum available.

C. Refer to Sections 22 10 00 and 23 80 00 for specific system piping materials.

2.02 MATERIALS AND PRODUCTS

A. No material installed as part of this Work shall contain asbestos.

B. Insulation products, including insulation, insulation facings, jackets, adhesives, sealants and coatings shall not contain polybrominated diphenyl ethers (PBDEs) in penta, octa, or deca formulations in amounts greater than 0.1 percent (by mass).

2.03 ELECTRIC MOTORS

A. General Motor Requirements: Comply with NEMA MG 1 unless otherwise indicated. Comply with IEEE 841 for severe-duty motors.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. U.S. Motors.
b. Century Electric.
c. General Electric.
d. Lincoln.
e. Gould.

B. Motor Characteristics: Designed for continuous duty at ambient temperature of 40 deg. C and at altitude of 3300 feet above sea level. Capacity and torque shall be 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.

1. Motors exceeding the nameplate amperage shall be promptly replaced at no cost to the Owner. Horsepower shown is minimum and shall be increased as necessary to comply with above requirements. Furnish motors with splash-proof or weatherproof housings, where required or recommended by the manufacturer. Match the nameplate voltage rating with the electrical service supplied. Check Electrical Drawings. Provide a transformer for each motor not wound specifically for system voltage.

C. Polyphase Motors: NEMA MG 1, Design B, medium induction motor, premium efficiency as defined in NEMA MG 1. Select motors with service factor of 1.15. Provide motor with random-wound, squirrel cage rotor, and permanently lubricated or regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading. Temperature rise shall match insulation rating. Provide Class F insulation.

1. Multispeed motors shall have separate windings for each speed.

D. Polyphase Motors with Additional Requirements:

1. 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.
2. Motors Used with Variable Frequency Controllers:

a. Separately Connected Motors: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
b. 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.
c. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
d. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
e. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
f. Each motor shall be provided with a shaft grounding device for stray current protection.

3. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

E. Single-Phase Motors:

1. Select motors with service factor of 1.15.
2. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

a. Permanent-split capacitor.
b. Split phase.
c. Capacitor start, inductor run.
d. Capacitor start, capacitor run.

3. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
4. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
5. Motors 1/20 HP and Smaller: Shaded-pole type.

F. 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.

2.04 MOTOR STARTERS

A. Square D, Allen Bradley, or equal, in NEMA Type 1 enclosure, unless otherwise specified or required. Minimum starter size shall be Size 1. Provide NEMA 3R enclosure where exposed to outdoors.

B. Provide magnetic motor starters for equipment provided under the Mechanical Work. Starters shall be non-combination type. Provide part winding or reduced voltage start motors where shown or as hereinafter specified. Minimum size starter shall be Size 1.

1. All starters shall have the following:

a. Cover mounted hand-off-automatic switch. Starters installed exposed in occupied spaces shall have key operated HOA switch.
b. Ambient compensated thermal overload.
c. Fused control transformer (for 120 or 24 volt service).

d. Pilot lights, integral with the starters. Starters located outdoors shall be in NEMA IIIR enclosures.

2. Where three phase motors are provided for two-speed operation, provide two speed motor starters.
3. Starters for single-phase motors shall have thermal overloads. NEMA I enclosure for starters located indoors, NEMA IIIR enclosure for starters located outdoors.
4. Provide OSHA label indicating the device starts automatically.

2.05 STRAINERS FOR POTABLE WATER SYSTEMS

A. Strainers: Full line size, conforming to lead-free requirements of California Health and safety Code Section 11 68 75. "Y" pattern, 125 psi SWP minimum, with 304 stainless steel screens. Install all strainers with a blow-off hose valve with hose adapter. Strainer shall have gasketed cover with straight thread.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. 3 inches and smaller: bronze or brass body, threaded ends, with 20 mesh screen. Watts LF777SI, Wilkins SXL.
b. 4 inches and larger: Cast iron body, flanged ends, 1/16 inch or 1/8 inch screen as normally supplied for each size. Watts 77F-DI-125, Mueller 758.

2.06 STRAINERS FOR NON-POTABLE WATER SYSTEMS

A. Charles M. Bailey #100A, Armstrong, Muessco, or equal, Fig. 11 "Y" pattern, 125 psi WP minimum, with monel screens with 20 square mesh for 2 inches and smaller and 3/64 inch perforations for 2-1/2 inches and larger. Install all strainers with a blow-off hose valve with hose adapter. Strainer shall have gasketed cover with straight thread.

2.07 VALVE BOXES

A. General:

1. Where several valves or other equipment are grouped together, provide larger boxes of rectangular “vault” type adequately sized for condition and similar in construction to those specified above.
2. Provide valve box extensions as required to set bottom of valve box tight up to top of piping in which valve is installed.
3. Provide a tee handle wrench for each size, Alhambra Foundry Co. #A-3008, or equal.

B. Valve Boxes in Traffic Areas: Provide Christy No. G5 traffic valve box, Brooks, or equal, 10-3/8 inches inside diameter with extensions to suit conditions, with cast iron or steel locking cover. Provide Owner with set of special wrenches or tools as required for operation of valves.

C. Valve Boxes in Non-Traffic Areas: Provide Christy No. F22, Brooks, or equal, 8 inches inside diameter by 30 inches long, with cast iron or steel locking cover. Provide Owner with set of special wrenches or tools as required for operation of valves. Cut bottom of plastic body for operation of valves.

D. Valve Box (Rectangular Vault Type): Precast concrete or cast iron with cast iron or steel locking type covers lettered to suit service – Brooks No. 3-TL, Christy No. B3, Fraser No. 3, Alhambra A-3004 or A-3005, Alhambra E-2202, or E-2702, or equal, with extension to suit conditions.

2.08 GAUGES

A. Marsh "Series J", U.S. Gage, Danton 800, or equal, with bronze bushed movement and front recalibration. Dials shall be white with black numerals, 3-1/2 inch dial face. Normal reading shall be at mid-scale. Provide a needle valve on each gauge connection. Supply a gauge piped with branch isolation valves across the inlet and outlet of each pump and where shown on the Drawings.

B. Provide Pete's Plug II, Sisco P/T, or equal, test plug with Nordel core {and gasketed cap}, on inlet and outlet of each coil, boiler, condenser, chiller and heat exchanger and where shown on Drawings.

2.09 THERMOMETERS

A. Marsh, Taylor, Palmer, or equal, 5 inch diameter bimetal dial, adjustable from face, with adjustable positioner, located to be easily read from normal personnel approach. Normal reading shall be at mid-scale.

1. Provide extension for insulation.
2. Provide thermometers with steel bulb chambers and brass separable sockets.

B. Provide Pete's Plug II, Sisco P/T, or equal, test plug with Nordel core, on inlet and outlet of each coil, boiler, and heat exchanger and provide two digital electronic test thermometers for each range of fluid temperature and where shown on Drawings.

2.10 ACCESS DOORS

A. Where floors, walls, or ceilings must be penetrated for access to mechanical equipment, provide access doors, 14 inch by 14 inch minimum size in usable opening. Where entrance of a serviceman may be required, provide 20 inch by 30 inch minimum usable opening. Locate access doors/panels for non-obstructed and easy reach.

1. All access doors less than 7'-0" above floors and exposed to public access shall have keyed locks.

B. Access doors shall match those supplied in Division 08 in all respects, except as noted herein.

C. Provide stainless steel access doors for use in toilet rooms, shower rooms, kitchens and other damp areas. Provide steel access doors with prime coat of baked-on paint for all other areas.

D. Do not locate access doors in highly visible public areas such as lobbies, waiting areas, and primary entrance areas. Coordinate with the Architect when access is required in these areas.

E. Where specific information or details relating to access panels different from the above is shown or given on the Drawings or other Divisions of work, then that information shall supersede this specification.

F. Manufacturers: Subject to compliance with requirements, available manufacturers offering products which may be incorporated into the Work include Milcor, Karp, Nystrom, or Cesco, equal to the following:

1. Milcor

a. Style K (plaster).
b. Style DW (gypsum board).
c. Style M (Masonry).
d. Style "Fire Rated" where required.

2.11 THERMAL AND SEISMIC EXPANSION LOOPS

A. Manufactured assembly consisting of inlet and outlet elbow fittings, two sections of flexible metal hose and braid, and 180-degree return bend. Return bend section shall have support lug and plugged FPT drain. Flexible hose shall consist of corrugated metal inner hose and braided metal outer sheath. Assemblies shall be constructed from materials compatible with the fluid or gas being conveyed and shall be suitable for the system operating pressure and temperature. Provide assembly selected for 4 inches of movement.

B. Provide CSA certified expansion loops for use in natural or propane gas piping systems.

C. Where used in potable water systems, provide expansion loops of certified lead-free construction.

D. Basis-of-Design Product: Subject to compliance with requirements, provide Metraflex Inc., Metraloop series, or comparable product by one of the following, or equal:

1. Flexicraft Industries.

2.12 FLEXIBLE JOINTS

A. Where indicated on Drawings, provide Metraflex Metrasphere, Style R, Mason Industries, or equal, Spherical Expansion Joints. Provide control units at each expansion joint, arranged to limit both expansion and compression.

B. Flexible joints at entry points to building shall be Barco Ductile iron, Advanced Thermal Systems, or equal, threaded style with stainless ball and mineral filled seal.

2.13 PIPE GUIDES

A. Where flexible connections are indicated on Drawings, provide Metraflex style IV, B-Line, or equal, pipe guides in locations recommended by manufacturer. Maximum spacing from flexible connection to first pipe guide is 4 pipe diameters, and maximum spacing from second pipe guide is 14 pipe diameters.

2.14 EQUIPMENT IDENTIFICATION

A. Refer to Section 22 05 53 – Plumbing Identification.

2.15 PIPE IDENTIFICATION

A. Refer to Section 22 05 53 – Plumbing Identification.

2.16 INSULATION WORK

A. General:

1. For insulating domestic hot water pumps, refer to Section 22 50 00, Plumbing Equipment,
2. Insulation products, including insulation, insulation facings, jackets, adhesives, sealants and coatings shall not contain polybrominated diphenyl ethers (PBDEs) in penta, octa, or deca formulations in amounts greater than 0.1 percent (by mass).
3. Adhesives and sealants shall comply with testing and product requirements of South Coast Air Quality Management District, Rule 1168.
4. The term "piping" used herein includes pipe, valves, strainers and fittings.
5. Apply insulating cement to fittings, valves and strainers and trowel smooth to the thickness of adjacent covering. Cover with jacket to match piping. Extend covering on valves up to the bonnet. Leave strainer cleanout plugs accessible.
6. Provide pre-formed PVC valve and fitting covers.
7. Provide Calcium Silicate rigid insulation and sheet metal sleeve, 18 inch minimum length at each pipe hanger. Seal ends of insulation to make vapor tight with jacket.
8. Test insulation, jackets and lap-seal adhesives as a composite product and confirm flame spread of not more than 25 and a smoke developed rating of not more than 50 when tested in accordance with UL723 or ASTM E84.
9. Clean thoroughly, test and have approved, all piping and equipment before installing insulation and/or covering.
10. Repair all damage to existing pipe and equipment insulation whether or not caused during the work of this contract, to match existing adjacent insulation for thickness and finish, but conforming to flame spread and smoke ratings specified above.

B. Insulation of Piping:

1. Insulate domestic hot and tempered water with minimum 3-1/2 pounds per cubic foot density fiberglass with ASJ-SSL jacket. Insulation thickness shall be the following:

   a. Pipe 3/4 inches and smaller: 1 inch thick.
   b. Pipe 1 inch through 1-1/2 inches: 1-1/2 inches thick.
   c. Pipe 2 inches and larger: 2 inches thick.

2. Insulate domestic hot water piping under slab on grade with Owens Corning Foamglas, preformed pipe insulation, or equal. Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Cover pipe and fittings with insulation manufacturer’s recommended jacketing. Insulation thickness shall be the following:

   a. Pipe 3/4 inches and smaller: 2 inches thick.
   b. Pipe 1 inch and larger: 3 inches thick.

3. Insulate domestic cold water piping located within building, outside of insulation envelope in outside walls, vented attic spaces, and unheated spaces, including equipment rooms and below

raised floor with 1 inch thick molded fiberglass, minimum 3-1/2 pound per cubic foot density, with ASJ-SSL jacket.

4. Insulate domestic cold water piping located outside building exposed to weather with minimum 3-1/2 pounds per cubic foot density fiberglass with ASJ-SSL jacket. Insulation thickness for all pipe sizes: 2 inches.
5. Insulate roof drain and overflow drain bodies, horizontal sections of rainwater leader piping and overflow piping, and condensate drains within the building envelope with 1 inch thick fiberglass, minimum 3-1/2 pound per cubic foot density, with ASJ-SSL jacket.
6. Insulate condensate drain piping in freezer with 3/4 inch thick Therma-Cel, Armaflex, or equal. Seal water tight per manufacturer's directions. Install heat tape prior to insulation of piping, in accordance with manufacturer's directions.
7. Insulate electrically heat-traced grease waste piping under slab on grade with Owens Corning Foamglas, preformed pipe insulation, or equal. Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Cover pipe and fittings with insulation manufacturer’s recommended jacketing. Insulation thickness for all pipe sizes: 3 inches.
8. Exposed insulated piping within the building shall have a Zeston 2000 25/50, Proto Lo-Smoke, or equal, PVC jacket and fitting cover installed over the insulation, applied per manufacturer's instructions. Insulation shall be vapor tight before applying PVC jacket and fitting covers. Verify suitability with manufacturer of insulation. Insulation with pre-applied polymer jacket may be substituted at Contractor’s option.
9. Where insulated piping is exposed to the weather apply aluminum jacket secured with 1/2 inch stainless-steel bands on 12 inch centers. Insulation shall be vapor tight before applying metal jacket, and aluminum fitting covers. Install jacketing with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Cover fittings with glass cloth, two coats of Foster Sealfas 30-36, and factory-fabricated aluminum fitting covers, of same material, finish, and thickness as jacket. Insulation shall be vapor tight before applying metal jacket and fitting covers.

    a. Fitting covers:

        1) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
        2) Tee covers.
        3) Flange and union covers.
        4) End caps.
        5) Beveled collars.
        6) Valve covers.
        7) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

    b. Jacket thickness:

        1) Pipes 10 inches diameter and smaller: Minimum .016 inch thick jacket with smooth finish.
        2) Pipes 12 inches diameter and larger: Minimum .020 inch thick jacket with smooth finish.

PART 3 - EXECUTION

3.01 EXISTING MATERIALS

A. Remove existing equipment, piping, wiring, construction, etc., which interferes with Work of this Contract. Promptly return to service upon completion of work in the area. Replace items damaged by Contractor with new material to match existing.

B. Removed materials which will not be re-installed and which are not claimed by Owner shall become property of Contractor and shall be removed from Project site. Consult Owner before removing any material from Project site. Carefully remove materials claimed by Owner to prevent damage and deliver to Owner-designated storage location.

C. Existing piping and wiring not reused and are concealed in building construction may be abandoned in place and all ends shall be capped or plugged. Remove unused piping and wiring exposed in Equipment Rooms or occupied spaces. Material shall be removed from Project premises. Disconnect power, water, gas, pump or any other active energy source from piping or electrical service prior to abandoning in place.

D. Existing piping, ductwork, and equipment modified or altered as part of this Work shall comply with the most recent applicable code requirements.

3.02 FRAMING, CUTTING AND PATCHING

A. Special framing, recesses, chases and backing for Work of this Section, unless otherwise specified, are covered under other Specification Sections.

B. Contractor is responsible for placement of pipe sleeves, hangers, inserts, supports, and location of openings for the Work.

C. Cutting, patching, and repairing of existing construction to permit installation of equipment, and materials is the responsibility of Contractor. Repair or replace damage to existing work with skilled mechanics for each trade.

D. Cut existing concrete construction with a concrete saw. Do not utilize pneumatic devices.

E. Core openings through existing construction for passage of new piping and conduits. Cut holes of minimum diameter to suit size of pipe and associated insulation installed. Coordinate with building structure, and obtain Structural Engineer's approval prior to coring through existing construction.

3.03 PLUMBING DEMOLITION

A. Refer to Division 01 Sections “Cutting and Patching” and “Selective Demolition” for general demolition requirements and procedures.

B. Disconnect, dismantle and remove mechanical systems, equipment, and components indicated to be removed. Coordinate with all other trades.

1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping to remain with same or compatible piping material. Refrigerant system must be evacuated per EPA requirements.
3. Equipment to Be Removed: Drain down and cap remaining services and remove equipment.
4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.04 ELECTRICAL REQUIREMENTS

A. Provide adequate working space around electrical equipment in compliance with the California Electrical Code. Coordinate the Mechanical Work with the Electrical Work to comply.

B. Furnish necessary control diagrams and instructions for the controls. Before permitting operation of any equipment which is furnished, installed, or modified under this Section, review all associated electrical work, including overload protection devices, and assume complete responsibility for the correctness of the electrical connections and protective devices. Motors and control equipment shall conform to the Standards of the National Electrical Manufacturers' Association. All equipment and connections exposed to the weather shall be NEMA IIIR with factory-wired strip heaters in each starter enclosure and temperature control panel where required to inhibit condensation.

C. All line voltage and low voltage wiring and conduit associated with the Temperature Control System are included in this Section. Wiring and conduit shall comply with Division 26.

3.05 PIPING SYSTEM REQUIREMENTS

A. Drawing plans, schematic 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.

3.06 PRIMING AND PAINTING

A. Perform priming and painting on the equipment and materials as specified herein.

B. See Division 09 Painting Section(s) for detailed requirements.

C. Priming and Painting:

1. Exposed ferrous metals, including piping, which are not galvanized or factory-finished shall be primed and painted.

a. Black Steel Piping:

1) Primer: One coat gray Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, comparable products by Rust-Oleum, Kelly Moore, or equal.

2) Topcoat: Two coats gray Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel, comparable products by Rust-Oleum, Kelly Moore, or equal.

2. Metal surfaces of items to be jacketed or insulated except piping shall be given two coats of primer unless furnished with equivalent factory finish. Items to be primed shall be properly cleaned by effective means free of rust, dirt, scale, grease and other deleterious matter and then primed with the best available grade of zinc rich primer. After erection or installation, all primed surfaces shall be properly cleaned of any foreign or deleterious matter that might impair proper bonding of subsequent paint coatings. Any abrasion or other damage to the shop or field prime coat shall be properly repaired and touched up with the same material used for the original priming.
3. Where equipment is provided with nameplate data, the nameplate shall be masked off prior to painting. When painting is completed, remove masking material.

3.07 EXCAVATING

A. Perform all excavating required for work of this Section. Provide the services of a pipe/cable locating service prior to excavating activities to determine location of existing utilities.

B. Unless shown otherwise, provide a minimum of 2'-6" cover above top of pipe to finished grade for all service piping, unless otherwise noted. Trim trench bottom by hand or provide a 4 inch deep minimum bed of sand to provide a uniform grade and firm support throughout entire length of pipe. For all PVC pipe and for PE gas pipe, bed the pipe in 4 inch sand bed. Pipe bedding materials should be clean crushed rock, gravel or sand of which 100 percent will pass a 1 inch sieve. For pipes that are larger than 10 inches in diameter, at least 95 percent should pass a 3/4 inch sieve, and for pipes 10 inches in diameter or smaller, 100 percent should pass a 1/2 inch sieve. All other materials should have a minimum sand equivalent of 50. Only a small proportion of the native soils will meet these requirements without extensive processing; therefore, importation of pipe bedding materials should be anticipated. Pipe bedding materials shall be compacted in lifts not exceeding 6 inches in compacted thickness. Each lift shall be compacted to not less than 90 percent relative compaction at or above the optimum moisture content, in accordance with ASTM Specification D2940, except that bedding materials graded such that 100 percent of the material will pass a No. 200 sieve shall be compacted in 6 inch lifts using a single pass of a flat-plate, vibratory compactor or vibratory drum. Pipe bedding materials should extend at least to the spring line.

C. Maintain all warning signs, barricades, flares, and red lanterns as required.

D. For all trenches 5 feet or more in depth, submit copy of permit detailed drawings showing shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trenches. Obtain a permit from the Division of Industrial Safety prior to beginning excavations. A copy of the permit shall be available at the site at all times.

3.08 BACKFILLING

A. Backfill shall comply with applicable provisions of Division 31 of these Specifications.

B. Except under existing or proposed paved areas, walks, roads, or similar surfaces, backfill for other types of pipe shall be made using suitable excavated material or other approved material. Place

backfill in 8 inch layers, measured before compaction, and compact with impact hammer to at least 90 percent relative compaction per ASTM D2940.

1. Backfill plastic pipe and insulated pipe with sand for a minimum distance of 12 inches above the top of the pipe. Compact using mechanical tamping equipment.

C. Entire backfill for excavations under existing or proposed pavements, walks, roads, or similar surfaces, under new slabs on grade, shall be made with clean sand compacted with mechanical tamping equipment vibrator to at least 90 percent relative compaction per ASTM D2940. Remove excess earth. Increase the minimum compaction within the uppermost two feet of backfill to 95 percent.

D. Replace or repair to its original condition all sod, concrete, asphalt paving, or other materials disturbed by the trenching operation. Repair within the guarantee period as required.

3.09 PIPING SYSTEMS INSTALLATION

A. At time of final connection, and prior to opening valve to allow pressurization of water and gas piping from existing systems, on site or off site, perform a pressure test to indicate static pressure of existing systems. If pressure on water piping is greater than 80 psi, or gas pressure is not as indicated on Contract Documents, inform Architect immediately. Do not allow piping systems to be pressurized without written consent of the Architect.

B. General:

1. All piping shall be concealed unless shown or otherwise directed. Allow sufficient space for ceiling panel removal.
2. Installation of piping shall be made with appropriate fittings. Bending of piping will not be accepted.
3. Install piping to permit application of insulation and to allow valve servicing.
4. Where piping or conduit is left exposed within a room, the same shall be run true to plumb, horizontal, or intended planes. Where possible, uniform margins are to be maintained between parallel lines and/or adjacent wall, floor, or ceiling surfaces.
5. Horizontal runs of pipes and/or electrical conduit suspended from ceilings shall provide for a maximum headroom clearance. The clearance shall not be less than 6'-6" without written approval from the Architect.
6. Close ends of pipe immediately after installation. Leave closure in place until removal is necessary for completion of installation.
7. Each piping system shall be thoroughly flushed and proved clean before connection to equipment.
8. Pipe the discharge of each relief valve, air vent, backflow preventer, and similar device to floor sink or drain.
9. Install exposed polished or enameled connections with special care showing no tool marks or threads at fittings.
10. Install horizontal valves with valve stem above horizontal.
11. Use reducing fittings; bushings shall not be allowed. Use eccentric reducing fittings wherever necessary to provide free drainage of lines and passage of air.
12. Verify final equipment locations for roughing-in.

13. Service Markers: Mark the location of each plugged or capped pipe with a 4 inch round by 30 inch long concrete marker, set flush with finish grade. Provide 2-1/2 inch diameter engraved brass plate as part of monument marker.
14. Furnish and install anchors or thrust blocks on PVC water lines in the ground, at all changes in direction of piping, and at all connections or branches from mains 1-1/2 inch and larger. Form anchors or thrust blocks by pouring concrete between pipe and trench wall. Thrust blocks shall be of adequate size and so placed as to take thrusts created by maximum internal water pressure. Sizing and placement shall be per manufacturer's recommendations, CPC, and IAPMO installation standards. Anchor piping to building construction.
15. Sanitary Sewer and Storm Drain: Grade piping inside building uniformly 1/4 inch per foot if possible but not less than 1/8 inch per foot. Run piping as straight as possible. Make piping connections between building piping and outside service pipe with cast iron reducers or increasers. Slope sewers uniformly between given elevations where invert elevations are shown.
16. Where piping is installed in walls within one inch of the face of stud, provide a 16 gauge sheet metal shield plate on the face of the stud. The shield plate shall extend a minimum of 1-1/2 inches beyond the outside diameter of the pipe.

C. Expansion Loops:

1. Install expansion loops where piping crosses building expansion or seismic joints, between buildings, between buildings and canopies, and as indicated on Drawings.
2. Install expansion loops of sizes matching sizes of connected piping.
3. Install grooved-joint expansion joints to grooved-end steel piping.
4. Materials of construction and end fitting type shall be consistent with pipe material and type of gas or liquid conveyed by the piping system in which expansion loop is installed.

D. Sleeves:

1. Install Adjus-to-Crete, Pipeline Seal and Insulator, or equal, pipe sleeves of sufficient size to allow for free motion of pipe, 24 gauge galvanized steel. The space between pipe and sleeves through floor slabs on ground, through outside walls above or below grade, through roof, and other locations as directed shall be caulked with oakum and mastic and made watertight. The space between pipe and sleeve and between sleeve and slab or wall shall be sealed watertight.
2. At Contractor's option, Link-Seal, Metraflex Metraseal, or equal, casing seals may be used in lieu of caulking. Wrap pipes through slabs on grade with 1 inch thick fiberglass insulation to completely isolate the pipe from the concrete.

E. Floor, Wall, and Ceiling Plates:

1. Fit all pipes with or without insulation passing through walls, floors, or ceilings, and all hanger rods penetrating finished ceilings with chrome-plated or stainless escutcheon plates.

F. Firestopping:

1. Pack the annular space between the pipe sleeves and the pipe through all floors and walls with UL listed fire stop, and sealed at the ends. All pipe penetrations shall be UL listed, Hilti, 3M Pro-Set, or equal.

a. Install fire caulking behind mechanical services installed within fire rated walls, to maintain continuous rating of wall construction.

2. Provide SpecSeal Systems UL fire rated sleeve/coupling penetrators for each pipe penetration or fixture opening passing through floors, walls, partitions or floor/ceiling assemblies. All Penetrators shall comply with UL Fire Resistance Directory (Latest Edition), and in accordance with Chapter 7, CBC requirements.
3. Sleeve penetrators shall have a built in anchor ring for waterproofing and anchoring into concrete pours or use the special fit cored hole penetrator for cored holes.
4. Copper and steel piping shall have SpecSeal plugs on both sides of the penetrator to reduce noise and to provide waterproofing.
5. All above Systems to be installed in strict accordance with manufacturer's instructions.
6. Alternate firestopping systems are acceptable if approved equal. However, any deviation from the above specification requires the Contractor to be responsible for determining the suitability of the proposed products and their intended use, and the Contractor shall assume all risks and liabilities whatsoever in connection therewith.

G. Flashing:

1. Flashing for penetrations of metal or membrane roof for mechanical items such as flues and pipes shall be coordinated with the roofing manufacturer and roofing installer for the specific roofing type. The work of this section shall include furnishing, layout, sizing, and coordination of penetrations required for the mechanical work.

a. Furnish and install flashing and counterflashing in strict conformance with the requirements of the roofing manufacturer. Submit shop drawing details for review prior to installation.
b. Furnish and install counterflashing above each flashing required. Provide Stoneman, or equal, vandalproof top and flashing combination. Provide vandalproof top for each plumbing vent through roof. Elmdor/Stoneman Model 1540, 1550, 1570, or equal.

2. For all other types of roofing system, furnish and install around each pipe, where it passes through roof, a flashing and counterflashing. All flashing shall be made of four pound seamless sheet lead with 6 inch minimum skirt and steel reinforced boot. Counterflashing shall be cast iron. For vents, provide vandalproof top and flashing combination. Elmdor/Stoneman Model 1100-4, 1100-5, 1100-7, or equal.

H. Hangers and Supports:

1. Refer to Section 22 05 29 – Plumbing Pipe Support and Anchors.

3.10 UNION AND FLANGE INSTALLATION

A. Install Watts, Epco, Nibco, or equal, dielectric unions or flanges at points of connection between copper or brass piping or material and steel or cast iron pipe or material except in drain, waste, vent, or rainwater piping. Bushings or couplings shall not be used. Dielectric unions installed in potable water systems shall conform to the lead-free requirements of the California Health and Safety Code Section 11 68 75.

B. Install unions in piping NPS 2” and smaller, and flanges in piping NPS 2-1/2” and larger whether shown or not at each connection to all equipment and tanks, and at all connections to all automatic valves, such as temperature control valves. Unions installed in potable water systems shall conform to the lead-free requirements of the California Health and Safety Code Section 11 68 75.

C. Locate the unions for easy removal of the equipment, tank, or valve.

3.11 ACCESS DOOR INSTALLATION

A. Furnish and install access doors wherever required whether shown or not for easy maintenance of mechanical systems; for example, at concealed valves, strainers, traps, cleanouts, dampers, motors, controls, operating equipment, etc. Access doors shall provide for complete removal and replacement of equipment.

3.12 CONCRETE WORK

A. Concrete work required for work of this Section shall be included under another section of the Specification, unless otherwise noted, including poured-in-place concrete work for installing precast manholes, catch basins, etc., and shall include reinforced concrete bases for pumps, tanks, compressors, fan units, boilers, unless the work is specifically indicated on the Drawings to be furnished under this Section.

B. Thrust blocks, underground anchors, and pads for cleanouts, valve access boxes and washer boxes are included under this Section of the Specification. Concrete shall be 3000 psi test minimum. Refer to Division 03 for concrete types.

3.13 PIPE PROTECTION

A. Wrap bare galvanized and black steel pipe buried in the ground and to 6" above grade, including piping in conduit, with one of the following, or equal:

1. Polyethylene Coating: Pressure sensitive polyethylene coating, "X-Tru-Coat" as manufactured by Pipe Line Service Corporation or "Green Line" wrap as manufactured by Roystron Products, or equal.

   a. Field Joints and Fittings: Protecto Wrap #1170 tape as manufactured by Pipe Line Service Corporation, or Primer #200 tape by Roystron Products, or equal. Installation shall be as per manufacturer's recommendation and instructions.

2. Tape Wrap: Pressure-sensitive polyvinyl chloride tape, "Transtex #V-l0 or V-20", "Scotchwrap 50", Slipknot l00, PASCO Specialty & Mfg., Inc., or equal, with continuous identification. Tape shall be a minimum of 20 mils thick for fittings and irregular surfaces, two wraps, 50 percent overlap, 40 mils total thickness. Tape shall be laminated with a suitable adhesive; widths as recommended by the manufacturer for the pipe size. Wrap straight lengths of piping with an approved wrapping machine.

B. Field Joints: Valves and Fittings: double wrap polyvinyl chloride tape as above. Provide at least two thicknesses of tape over the joint and extend a minimum of 4 inches over adjacent pipe covering.

Build up with primer to match adjacent covering thickness. Width of tape of fittings shall not exceed 3 inches. Tape shall adhere tightly to all surfaces of the fittings without air pockets.

C. Testing: Test completed wrap of piping, including all epoxy painted piping with Tinker and Rasor Co. test machine (San Gabriel, CA - 818-287-5259), Pipeline Inspection Company (Houston, TX - 713-681-5837), or equal.

D. Cleaning: Clean all piping thoroughly before wrapping.

1. Inspection: Damaged or defective wraps shall be repaired as directed. No wrapped pipe shall be covered until approved by Architect.

E. Sleeve copper piping/tubing installed below slab with “Polywrap-C” polyethylene sleeve, as manufactured by Northtown Pipe Protection Products, or equal. Sleeve shall be a minimum of 6 mils thick, colored blue for domestic water piping and orange for other piping. Install sleeve per manufacturer’s recommendations and instructions.

F. Sleeve copper piping/tubing installed outside building below grade with “Polywrap-C” polyethylene sleeve, as manufactured by Northtown Pipe Protection Products, or equal. Sleeve shall be a minimum of 6 mils thick, colored blue for domestic water piping. Install sleeve per manufacturer’s recommendations and instructions.

G. Sleeve cast iron and ductile iron pipe below grade and below slab with “Polywrap” polyethylene sleeve, as manufactured by Northtown Pipe Protection Products, or equal. Sleeve shall be a minimum of 8 mils thick, colored natural. Install sleeve per manufacturer’s recommendations and instructions.

H. Covering: No rocks or sharp edges shall be backfilled against the wrap or sleeve. When backfilling with other than sand, protect wrap with an outer wrapping of Kraft paper; leave in place during backfill.

3.14 PIPE IDENTIFICATION

A. Refer to Section 22 05 53 – Plumbing Identification.

3.15 EXPANSION ANCHORS IN HARDENED CONCRETE

A. Refer to Structural Drawings.

Use either paragraph A above, or paragraphs B thru E below, but not both.

B. Qualification Tests: The specific anchor shall have a current ICC-ES report and evaluated in cracked concrete in accordance with Acceptance Criteria AC193. If the specific anchor satisfies cyclic testing requirements per Acceptance Criteria AC01, Section 5.6, the full allowable shear and tension loads listed in the current ICC-ES report and manufacturer’s recommendations for the specific anchor may be used. Otherwise, the design shear and tension loads shall not be more than 80% of the listed allowable shear and tension loads for the specific anchor.

C. Installation: The anchors must be installed in accordance with the requirements given in ICC Research Committee Recommendations for the specific anchor.

D. Testing: Fifty percent of the anchors shall be load-tested on each job to twice the allowable capacity in tension, except that if the design load is less than 75 pounds; only one anchor in ten need be tested. If any anchor fails, all anchors must be tested. The load test shall be performed in the presence of a special inspector.

E. The load may be applied by any method that will effectively measure the tension in the anchor, such as direct pull with a hydraulic jack, a torque wrench calibrated using the specific anchor or calibrated spring-loading devices. Anchors in which the torque is used to expand the anchor without applying tension to the bolt may not be verified with a torque wrench.

3.16 PIPING SYSTEM PRESSURE TESTING

A. General:

1. Perform operational tests under simulated or actual service conditions, including one test of complete plumbing installation with fixtures and other appliances connected.
2. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.

B. Piping Systems: Test piping systems in accordance with the following requirements and applicable codes:

1. Authority having jurisdiction shall witness tests of piping systems.
2. Notify Architect at least seven days in advance of testing.
3. All piping shall be tested at completion of roughing-in, or at other times as directed by Architect.
4. Furnish necessary materials, test pumps, gases, instruments and labor required for testing.
5. Isolate from system equipment that may be damaged by test pressure.
6. Make connections to existing systems with flanged connection. During testing of new work, provide a slip-in plate to restrict test pressure to new systems. Remove plate and make final connection to existing system at completion of testing.

   a. Authority having jurisdiction shall witness final connection to system.

C. Test Schedule: No loss in pressure or visible leaks shall show after four hours at the pressures indicated.

D. Testing of Sanitary Sewer, Drain, Vent, and Storm Drain may be done in segments in order to limit pressure to within manufacturer's recommendations. Test to 10 feet above highest point in the system.

System Tested	Test Pressure PSI	Test With
Sanitary Sewer, Drain, Vent	10 Ft. Hd.	Water
Storm Drain, Condensate Drains	10 Ft. Hd.	Water
Domestic Water	125	Water

Natural Gas (PE)	60	Air & Non-corrosive Leak Test Fluid
Natural Gas (Steel)	100	Air & Non-corrosive Leak Test Fluid
Compressed Air	200 lb.	Air & Non-corrosive Leak Test Fluid
Deionized Water	50	Water

1. Flush deionized water lines with deionized water after test and approval.
2. Non-corrosive leak test fluid shall be suitable for use with piping material specified, and with the type of gas conveyed by the piping system.

3.17 TRACER WIRES

A. Provide tracer wire for non-metallic gas and water pipe in ground outside of buildings. Use AWG #14 tracer wire with low density high molecular weight polyethylene insulation, and lay continuously on pipe so that it is not broken or stressed by backfilling operations. Secure wire to the piping with tape at 18 inch intervals. Solder all joints. Tracer wire insulation shall be colored yellow for gas piping, blue for water piping.

B. Terminals: Precast concrete box and cast iron locking traffic cover, Brooks 3TL, or equal; cover marked with name of service; 6 inches of loose gravel below box. Plastic terminal board with brass bolts; identify line direction with plastic tags. Test for continuity between terminals, after backfilling, in presence of Inspector.

C. Alternate: Use electronically detectable plastic tape with metallic core, Terra Tape D, manufactured by Reef Industries, Inc., Seton, Inc., Marking Services, Inc., or equal; tape 2 inches wide, continuously imprinted "CAUTION WATER (GAS, etc.) LINE BELOW". Install, with printed side up, directly over pipe, 18 inches below finish grade. Backfill material shall be as specified for the particular condition where pipe is installed, but avoid use of crushed rock or of earth with particles larger than l/2 inch within the top 12 inches of backfill. Take precautions to insure that tape is not damaged or misplaced during backfill operations. Terminal boxes not required.

3.18 OPERATION OF SYSTEMS

A. Do not operate any plumbing equipment for any purpose, temporary or permanent, until all of the following has been completed:

1. Complete all requirements listed under “Check, Test and Start Requirements.”
2. Piping has been properly cleaned. Piping systems shall be flushed and treated prior to operation.
3. Filters, strainers etc. are in place.
4. Bearings have been lubricated, and alignment of rotating equipment has been checked.
5. Equipment has been run under observation, and is operating in a satisfactory manner.

B. Provide test and balance agency with one set of Contract Drawings, Specifications, Addenda, Change orders issued, applicable shop drawings and submittals and temperature control drawings.

3.19 CHECK, TEST AND START REQUIREMENTS

A. An authorized representative of the equipment manufacturer shall perform check, test and start of each piece of plumbing equipment. The representative may be an employee of the equipment manufacturer, or a manufacturer-certified contractor. Submit written certification from the manufacturer stating that the representative is qualified to perform the check test and start of the equipment.

1. As part of the submittal process, provide a copy of each manufacturer’s printed startup form to be used.
2. Some items of specified equipment may require that check, test and start of equipment must be performed by the manufacturer, using manufacturer’s employees. See specific equipment Articles in these Specifications for this requirement.
3. Provide all personnel, test instruments, and equipment to properly perform the check, test and start work.
4. When work has been completed, provide copies of reports for review, prior to final observation of work.

B. Provide copies of the completed check, test and start report of each item of equipment, bound with the Operation and Maintenance Manual.

C. Upon completion of the work, provide a schedule of planned maintenance for each piece of equipment. Indicate frequency of service, recommended spare parts (including filters and lubricants), and methods for adjustment and alignment of all equipment components. Provide a copy of the schedule with each operating and maintenance manual. Provide a copy of certification from the Owner’s representative indicating that they have been properly instructed in maintenance requirements for the equipment installed.

3.20 PRELIMINARY OPERATIONAL REQUIREMENTS AND TESTS

A. Prior to observation to determine final acceptance, put all mechanical systems into service and check that work required for that purpose has been done, including but not limited to the following condensed check list. Provide indexed report to tabulating the results of all work.

1. All equipment has been started, checked, lubricated and adjusted in accordance with the manufacturer's recommendations.
2. Correct rotation of motors and ratings of overload heaters are verified.
3. Specified filters are installed and spare filters have been turned over to Owner.
4. All manufacturers’ certificates of start-up specified have been delivered to the Owner.
5. All equipment has been cleaned, and damaged painted finishes touched up.
6. Missing or damaged parts have been replaced.
7. Flushing and chemical treatment of piping systems has been completed and water treatment equipment, where specified, is in operation.
8. Equipment labels, pipe marker labels, ceiling markers and valve tags are installed.
9. Valve tag schedules, corrected control diagrams, sequence of operation lists and start-stop instructions have been posted.

10. Preliminary test and balance work is complete, and reports have been forwarded for review.
11. Automatic control set points are as designated and performance of controls checks out to agree with the sequence of operation.
12. Operation and Maintenance Manuals have been delivered and instructions to the operating personnel have been made.

B. Prior to the observation to determine final acceptance, operate all mechanical systems as required to demonstrate that the installation and performance of these systems conform to the requirements of these specifications.

1. Operate and test all mechanical equipment and systems for a period of at least five consecutive 8 hour days to demonstrate the satisfactory overall operation of the project as a complete unit.
2. Commence tests after preliminary balancing and adjustments to equipment have been checked. Immediately before starting tests, install air filters and lubricate all running equipment. Notify the Architect at least seven calendar days in advance of starting the above tests.
3. During the test period, make final adjustments and balancing of equipment, systems controls, and circuits so that all are placed in first class operating condition.
4. Where Utility District rebates are applicable, demonstrate that the systems meet the rebate program requirements.

C. Review of Contractor's Tests:

1. All tests made by the Contractor or manufacturers' representatives are subject to observation and review by the Owner. Provide timely notice prior to start of each test, in order to allow for observation of testing. Upon the completion of all tests, provide a letter to confirm that all testing has been successful.

D. Test Logs:

1. Maintain test logs listing the tests on all mechanical systems showing dates, items tested, inspectors' names, remarks on success or failure of the tests.

E. Preliminary Operation:

1. The Owner reserves the right to operate portions of the plumbing system on a preliminary basis without voiding the guarantee.

3.21 CERTIFICATES OF INSTALLATION

A. Contractor shall complete applicable “Certificates of Installation” forms contained in the California Building Energy Efficiency Standards and submit to the authorities having jurisdiction for approval and issuance of final occupancy permit, as described in the California Energy Code.

3.22 DEMONSTRATION AND TRAINING

A. An authorized representative of the equipment manufacturer shall train Owner-designated personnel in maintenance and adjustment of equipment. The representative may be an employee of the equipment manufacturer, or a manufacturer-certified contractor. Submit written certification

from the manufacturer stating that the representative is qualified to perform the Owner training for the equipment installed.

1. As part of the submittal process, provide a training agenda outlining major topics and time allowed for each topic.
2. Some items of specified equipment require that training must be performed by the manufacturer, using manufacturer's employees. See specific equipment Articles in these Specifications for this requirement.
3. Contractor shall provide three copies of certification by Contractor that training has been completed, signed by Owner's representative, for inclusion in Operation and Maintenance Manual. Certificates shall include:

    a. Listing of Owner-designated personnel completing training, by name and title.
    b. Name and title of training instructor.
    c. Date(s) of training.
    d. List of topics covered in training sessions.

4. Refer to specific equipment Articles for minimum training period duration for each piece of equipment.

END OF SECTION

SECTION 22 05 53

PLUMBING IDENTIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Stencils.

D. Pipe Markers.

1.02 RELATED REQUIREMENTS

A. Refer to the General Conditions, Special Conditions and Division 1 General Requirements. The requirements of these sections apply to this section.

B. Section 09 90 00 - Paints and Coatings: Identification painting.

1.03 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems; The American Society of Mechanical Engineers; 2007.

1.04 SUBMITTALS

A. See Section 00 72 00 - Submittals, for submittal procedures.

B. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

C. Product Data: Provide manufacturers catalog literature for each product required.

D. Manufacturer's Installation Instructions: Indicate special procedures, and installation.

E. Project Record Documents: Record actual locations of tagged valves.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.

B. Seton Identification Products: www.seton.com/aec.

2.02 NAMEPLATES

A. Description: Laminated three-layer plastic with engraved letters.

1. Letter Color: White.
2. Letter Height: Equipment, control panels 1 inch.
3. Letter Height: Thermostats and small control components, 1/4 inch.
4. Background Color: Black.

2.03 TAGS

A. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

B. Chart: Typewritten letter size list in anodized aluminum frame.

2.04 STENCILS

A. Stencils: With clean cut symbols and letters of following size:

1. Access Doors and Similar Operational Instructions: Minimum 3/4" high letters.

B. Stencil Paint: As specified in Section 09 90 00, semi-gloss enamel, colors conforming to ASME A13.1.

2.05 PIPE MARKERS

A. Comply with ASME A13.1.

B. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

C. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

D. Service Markers: Identify buried plugged or capped pipe with concrete marker, 4 inch diameter by 30 inches long, set flush with grade. Provide engraved brass nameplate identifying pipe stub.

PART 3 - EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.02 INSTALLATION

A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Apply stencil painting in accordance with Section 09 90 00.

D. Install plastic pipe markers in accordance with manufacturer's instructions.

E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

F. Identify domestic hot water heating equipment, including water heaters, pumps, expansion tanks, etc. with plastic nameplates.

G. Identify control panels and major control components outside panels with plastic nameplates.

H. Identify valves in main and branch piping with tags.

I. Tag automatic controls, instruments, and relays. Key to control schematic.

J. Identify piping, concealed or exposed, with plastic pipe markers. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet (6 m) on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

K. Provide red ceiling dots to locate valves above T-bar type panel ceilings. Locate in corner of T-bar panel closest to equipment.

END OF SECTION

SECTION 22 10 00

PLUMBING PIPING SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Valves.
3. Domestic water piping specialties.
4. Gas piping specialties.
5. Drain and waste piping specialties.

1.02 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 22 00 50 Basic Plumbing Materials and Methods.

C. Section 22 05 29 Plumbing Pipe Supports and Anchors.

D. Section 22 05 48 Plumbing Vibration and Seismic Control.

E. Section 22 05 53 Plumbing Identification.

1.03 ACTION SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Product Data: Submit manufacturer's technical product data and installation instructions for plumbing piping systems materials and products.

1.04 INFORMATIONAL SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Provide welding certificate for all gas pipe welders.

C. Gas Pipe Installer Qualifications: Provide evidence of current qualifications for individuals performing work requiring qualifications.

1.05 CLOSEOUT SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Maintenance Data: Submit maintenance data and parts lists for plumbing piping systems materials and products. Include this data in Operation and Maintenance Manual.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish to Owner, with receipt, one valve key for each key operated hydrant, bibb, or faucet installed.

1.07 QUALITY ASSURANCE

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Gas Pipe Installer Qualifications: Individuals performing tasks requiring qualifications under Federal and State regulations shall be qualified by the gas utility supplying Project site. The qualifications shall be current at the time of performing the Work.

C. NFPA/ANSI Compliance: Fabricate and install natural gas systems in accordance with latest edition of NFPA 54/ANSI Z223.1 "National Fuel Gas Code."

D. Pipe Welding: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

E. Fabricate and install natural gas systems in accordance with California Plumbing Code.

F. Utility Compliance: Fabricate and install natural gas systems in accordance with local gas utility company requirements.

PART 2 - PRODUCTS

2.01 MATERIALS AND PRODUCTS

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Provide materials and products complying with California Plumbing Code. Where more than one type of material or product is indicated, selection from materials or products specified is Contractor's option.

B. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372. Plastic piping components shall be marked with "NSF-pw."

2.02 PIPE AND FITTINGS ATTACHED TO AND BELOW BUILDINGS INCLUDING 5 FEET FROM BUILDINGS

A. Piping and fittings attached to covered walkways and corridors shall comply with the requirements of this article.

B. Drain and Waste Pipe Above Grade: Solvent weld PVC DWV pipe with belled end, and fittings, conforming to ASTM D2729 and so marked. Where installed exposed in ducts or plenums PVC pipe and fittings shall have a flame/smoke spread rating of not more than 25/50 in accordance with ASTM E84 or UL 723. Pipe and fittings shall be as manufactured by Charlotte, Westlake, or equal. Pipe and fittings shall be the products of a single manufacturer. Or, cast iron soil pipe and fittings, asphaltic coated, conforming to ASTM A888 and Cast Iron Soil Pipe Institute Standard (CISPI) 301 and so marked. Pipe and fittings shall be as manufactured by AB&I, Charlotte, Tyler Pipe, or equal. Pipe and fittings shall be the products of a single manufacturer. At Contractor’s option, vertical piping above floor from lavatories, sinks, and drinking fountains may be Schedule 40 galvanized steel pipe with black cast iron drainage fittings, or DWV weld pipe and fittings.

1. Cast iron joints above grade: No-Hub pipe conforming to ASTM A888 and CISPI 301. Couplings conforming to ASTM 1277 and CISPI 310, with stainless steel bands. Provide products by ANACO-Husky, Tyler, Ideal or equal. Provide sway brace at 20'-0" maximum spacing for suspended pipe with No-Hub joints. Provide a brace on each side of a change in direction of 90 degrees or more. Brace riser joints at each floor and at 15 foot maximum intervals (also see Specification Section 22 00 50).

C. Drain and Waste Pipe Below Grade: Solvent weld PVC DWV pipe with belled end, and fittings, conforming to ASTM D2729 and so marked. Pipe and fittings shall be as manufactured by Charlotte, Westlake, or equal. Pipe and fittings shall be the products of a single manufacturer. Or, cast iron soil pipe and fittings, asphaltic coated, conforming to ASTM A888 and CISPI 301 and so marked. Pipe and fittings shall be as manufactured by AB&I, Charlotte, Tyler Pipe, or equal. Pipe and fittings shall be the products of a single manufacturer. At Contractor's option, hub and spigot cast iron soil pipe and fittings, asphaltic coated, conforming to ASTM A-74 and so marked, may be used.

1. Cast iron joints below grade: ANACO-Husky SD 4000, Clamp-All 125, or equal couplings and No-Hub fittings, meeting the requirements of FM 1680, SD Class I and ASTM C1540.
2. Cast iron joints below grade (hub and spigot option): Neoprene gaskets conforming to ASTM C564, as manufactured by Ty-Seal, Dual-Tite, or equal.

D. Vent Pipe:

1. 3 inch and larger, above grade: Solvent weld PVC DWV pipe with belled end, and fittings, conforming to ASTM D2729 and so marked. Where installed exposed in ducts or plenums PVC pipe and fittings shall have a flame/smoke spread rating of not more than 25/50 in accordance with ASTM E84 or UL 723. Pipe and fittings shall be as manufactured by Charlotte, Westlake, or equal. Pipe and fittings shall be the products of a single manufacturer. Or, cast iron soil pipe and fittings conforming to ASTM A888 and Cast Iron Soil Pipe Institute Standard 301 and so marked. Joints in cast iron vent pipe shall be the same as specified for cast iron waste pipe above grade.
2. 2-1/2 inch and smaller, above grade: Solvent weld PVC DWV pipe and fittings as specified for sizes 3" and larger. Or, cast iron soil pipe and fittings as specified for sizes 3 inch and larger, Schedule 40 galvanized steel pipe with black cast iron drainage fittings, or DWV copper pipe and fittings.
3. Vent pipe below grade and to 6 inches above grade: Solvent weld PVC DWV pipe with belled end, and fittings, conforming to ASTM D2729 and so marked. Pipe and fittings shall be as manufactured by Charlotte, Westlake, or equal. Pipe and fittings shall be the products of a single manufacturer. Or, cast iron soil pipe and fittings conforming to ASTM A888 and Cast Iron Soil Pipe Institute Standard 301 and so marked. Joints in cast iron vent pipe shall be the same as specified for cast iron waste pipe below ground.

E. Type DWV copper tubing or No-Hub cast iron pipe and fittings may be used for concealed rainwater leaders. Where no-hub piping is used, the fittings and couplings shall match those used for waste piping.

F. Grease Waste (GW) and Vent (GV) Pipe Underground to 6 Inches Aboveground: George Fisher Sloane, Inc., "Fuseal PP," Orion Fittings, Inc., "Rionfuse CF," IPEX, Inc., "Enfield," or equal, Schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.

G. Grease Waste (GW) and Vent (GV) Pipe Aboveground:

1. In inaccessible spaces or within walls, George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, flame-retardant schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.
2. In accessible areas: George Fisher Sloan, Inc. “Fuseal PP,” Orion Fittings, Inc. “Blueline,” IPEX, Inc. "Labline," or equal, flame retardant Schedule 40 polypropylene drainage pipe and fittings, with mechanical joints. Piping shall comply with ASTM F1412.
3. Vent pipe aboveground: 3 Inches and Larger: Service weight cast iron soil pipe and fittings; 2-1/2 inches and smaller: Schedule 40 galvanized steel pipe with black cast iron drainage fittings.

H. Acid Waste (AW) and Vent (AV) Pipe Underground to 6 Inches Aboveground: George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, Schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.

I. Acid Waste (AW) and Vent (AV) Pipe Aboveground:

1. In inaccessible spaces or within walls, George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, flame-retardant Schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.
2. In accessible areas: George Fisher Sloan, Inc. “Fuseal PP,” Orion Fittings, Inc. “Blueline,” IPEX, Inc. "Labline," or equal, flame retardant Schedule 40 polypropylene drainage pipe and fittings, with mechanical joints. Piping shall comply with ASTM F1412.

J. Water Pipe (Tempered Water, Tempered Water Return, Hot Water, Hot Water Return and Cold Water): ASTM B88, Type L copper tubing, hard-temper, with wrought copper fittings. Provide full solder cup for all fittings. Capped or plugged outlets shall be Schedule 40 screwed brass. Water piping below slab: ASTM B88, Type K copper tubing, hard temper, with wrought copper fittings. At Contractor’s option, pipe runs below slab having no branches may be ASTM B88, Type K annealed copper tubing without joints. See Section 22 00 50 for pipe protection requirements for below slab copper piping.

K. Temperature and Pressure Relief Valve Piping: ASTM B88, Type L copper tubing, hard-temper, with wrought copper fittings. Provide full solder cup for all fittings. Capped or plugged outlets shall be Schedule 40 screwed brass.

L. Gas Pipe: Schedule 40 black steel conforming to ASTM A53, with malleable iron threaded fittings above grade for piping 2 inch and smaller; welded piping below grade and for above grade piping larger than 2 inches, with Class 150 welding fittings.

1. Appliance Flexible Connectors for Indoor Equipment Without External Spring Isolation:

a. Contractor may choose one of the following:

1) Direct gas pipe connection.
2) Appliance flexible connector:

a) Comply with ANSI Z21.24.

b) Polymer or hot-dipped PVC coated corrugated 304 stainless steel.
c) Operating-Pressure Rating: 0.5 psig.
d) End Fittings: Zinc-coated steel.
e) Maximum Length: 30 inches.
f) Manufacturers: Dormont, Series 30C, 31, 40C, 41, and 51, Brasscraft model ProCoat, or equal.

b. Provide with end connections compatible with equipment and piping system.
c. Equipment located in spaces normally accessible to building occupants, other than maintenance personnel, shall utilize direct gas pipe connection.
d. Provide anti-microbial PVC coating for use with appliances located in kitchen areas.

2. Flexible Gas Connector for Outdoor Equipment Without External Spring Isolation:

a. Contractor may choose one of the following:

1) Direct gas pipe connection.
2) Corrugated stainless steel hose with 304 stainless steel braid covering, CSA certified. Metraflex model GASCT, Unisource Manufacturing series 400, or equal. Provide with end connections compatible with equipment and piping system.

3. Flexible Gas Connector for Equipment with External Spring Isolation, Indoors and Outdoors:

a. Where Drawings indicate installation of mechanical equipment on spring isolation rails spring mounted curbs, or spring hangers, provide metal flexible connectors, Metraflex Metraloop, or equal by Unisource Mfg. Co., or Flexicraft Industries, CSA certified for 4 inches of movement in all directions.

4. Flexible Gas Connection System for Movable Gas-Fired Cooking Equipment:

a. System shall include flexible PVC coated braided stainless steel hose, quick disconnect fitting, full port CSA certified ball valve, 2 swivel elbows, coiled steel restraining cable and mounting hardware. Assembly shall be certified per ANSI Z21.69/CSA 6.16, “Connectors for Movable Gas Appliances.” Size as required for appliance connection, 48” minimum hose length. Install per manufacturer’s instructions. Connectors shall be Dormont Safety System, T&S Safe-T-Link, or equal.

M. Compressed Air Pipe: Type K copper tubing, hard temper, with wrought copper fittings. Capped or plugged outlets shall be screwed brass.

N. Condensate Drain Piping:

1. Inside buildings provide ASTM B88, Type M copper tubing and fittings. Provide Wye fittings with capped cleanout plug for tubing up to 1 inch size. Provide wrought or cast DWV fittings for sizes 1-1/4 inch and larger.
2. Outside buildings provide Schedule 40 galvanized steel pipe and cast iron drain or vent fittings.
3. Connect condensate drains to mechanical equipment per equipment manufacturer's recommendations; provide P-trap where required. Slope piping to drain, with 1 inch in 10 foot minimum pitch. Provide di-electric couplings or unions at connections to dissimilar materials.

4. Where Drawings indicate installation of mechanical equipment on spring isolation rails spring mounted curbs, or spring hangers, provide threaded metal connector at mechanical equipment, Metraflex Model SST, or equal by Unisource Mfg. Co., or Flexicraft Industries. Arrange flexible connection to ensure drainage of condensate, and support flexible connection at each end of connector, to ensure proper alignment.
5. Where condensate drain P-traps are required, install trap using Wye fitting on inlet and outlet of trap. Provide cap on top of each Wye, made removable for cleaning and inspection. Drill 1/8 inch diameter hole in cap at outlet of the trap to allow venting of the system. Minimum depth of trap should be 4 inches, or as recommended by the manufacturer in printed literature.
6. Provide cleanout tees or "Y" at each change in direction.

O. Condensing-Type Equipment Condensate Drain Pipe: CPVC pipe and fittings conforming to ASTM D-2846.

1. Provide CPVC condensate drain pipe for condensing water heaters, furnaces, and where shown on Drawings.
2. Piping and fittings shall be as manufactured by Spears Manufacturing, Charlotte Pipe and foundry Co., or equal.

P. Deionized Water Piping:

1. Polyvinylidene Fluoride (PVDF) Pressure Rated Pipe and Fittings: Schedule 80 PVDF pressure rated pipe and fittings. Pipe and fittings shall meet ASTM D-1785. Threaded fittings shall comply with ASTM D-2464. The pipe and fittings shall be sterilized and capped or packaged immediately after production and all seals shall be intact when the material is delivered to the jobsite.
2. Provide continuous channel support under all horizontal piping, B-line, Grinnell, or equal PVC coated channel systems, series B11 through B72 with matching pipe clamps as appropriate, or equal.

2.03 SITE PIPING AND FITTINGS TO 5 FEET FROM BUILDINGS

A. Buried Drain, Waste, and Vent Piping:

1. Install piping from street connection to the property line in accordance with local requirements.
2. 4 inches and larger: PVC, ASTM D3034 - SDR 35; use matching Ring Tite fittings.
3. 3 inches and smaller: Cast iron soil pipe and fittings, asphaltic coated, conforming to ASTM A888 and Cast Iron Soil Pipe Institute Standard 301 and so marked. Pipe and fittings shall be as manufactured by AB&I, Charlotte, Tyler pipe, or equal. Provide ANACO-Husky SD 4000, Clamp-All 125, or equal couplings and No-Hub fittings, meeting the requirements of FM 1680, SD Class I and ASTM C1540. Pipe and fittings shall be the product of a single manufacturer.

B. Grease Waste (GW) and Vent (GV) Pipe: George Fisher Sloane, Inc., "Fuseal PP," Orion Fittings, Inc., "Rionfuse CF," IPEX, Inc, "Enfield," or equal, polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.

C. Acid Waste (AW) and Vent (AV) Pipe: George Fisher Sloane, Inc., "Fuseal," Orion Fittings, Inc., "Rionfuse CF," IPEX, Inc., "Enfield," or equal, polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.

D. Water Service Piping:

1. Sizes 2 inches and larger (not under building): Gasket style PVC conforming to ASTM D2241-SDR21, Class 200 with gasket type fittings or ductile iron mechanical joint couplings. Gasket fittings shall be one piece injection molded PVC fittings, equal to Flo-Seal water main fittings for PVC pressure pipe, 200 psi, ASTM D-3139.
2. Sizes less than 2 inches: Type K copper tubing, hard temper, with wrought copper fittings. See Section 22 00 50 for pipe protection requirements for below grade copper piping.
3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

   a. J.M. Eagle.
   b. P.W. Pipe.
   c. Ipex Series Pipe.

E. Water Service Piping Above Grade:

1. Sizes 3 inches and larger: Class 150 flanged ductile cast iron water pipe conforming to AWWA/ANSI C150/A21.50 and manufactured in accordance with AWWA/ANSI C151/A21.51. Fittings shall conform to AWWA/AWWA C110/A21.10, Class 250 pattern. Pipe and fittings shall have factory applied cement-mortar lining in accordance with AWWA/ANSI C104/A21.4. Flanges shall conform to ASME/ANSI B16.1.
2. Piping 2-1/2 inches and smaller: Type K copper tubing, hard temper, with brazed wrought copper fittings.

F. Gas Piping Underground: Performance Pipe, “DriscoPlex” 6500 PE 2708 (yellow), Polypipe, Inc., “Polypipe”, or equal, polyethylene gas distribution pipe, ASTM D2513, ASTM D3261, and ASTM D2683 fittings with fusion welded joints. Provide piping labeled for natural gas in accordance with CPC.

1. Electrically isolate underground ferrous gas piping from the rest of the gas system with listed or approved isolation fittings installed a minimum of six inches above grade.
2. Provide Central Plastics Corp., Perfection, or equal, anodeless, single seal riser for transition from below grade polyethylene to schedule 40 steel piping above grade. Minimum horizontal length shall be 30 inches. Minimum vertical length shall be 30 inches, or greater as required. Provide fusion connection to polyethylene pipe below grade, and screwed connection to steel pipe above grade.

G. Gas Piping Aboveground to 30 inches Belowground: Schedule 40 black steel with beveled ends for welding, with Class 150 welding fittings. Mitering to form elbows or tees will not be permitted; where branch tee connections of welded piping are required, Bonney "Weldolet" Allied Pipe Fittings, or equal fittings may be used if the branch is one-half of the diameter of the main or less.

H. Drainage Pipe, Perforated or Un-perforated: J-M PVC, P.W. Pipe, or equal drainage pipe and fittings or non-reinforced concrete sewer pipe ASTM C14.

2.04 FIRE PROTECTION PIPING

A. Refer to specification Section 21 10 00 “Fire Protection.”

2.05 PIPE JOINING MATERIALS

A. Refer to piping Articles in this Section for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated

a. Full-Face Type: For flat-face, Class 125, cast iron and cast bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast iron and steel flanges.

2. AWWA C111, rubber, flat face, 1/8-inch (3.2mm) thick, unless otherwise indicated; and full-face or ring type, unless other indicated.
3. Flange Bolts and Nuts: AWWA C111, carbon steel, unless otherwise indicated.
4. Plastic, Pipe-Flange Gasket, Bolts and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, 100 percent lead free alloys. Include water-flushable flux according to ASTM B813.

D. Brazing Filler Metals: AWS A5.8, BCup-5 Series, copper-phosphorus unless otherwise indicated. Sil-Fos 15, or equal.

E. Welding Filler Metals: Comply with ASME B31.1 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

F. Solvent Cements for Joining CPVC Piping: ASTM F 493.

1. CPVC solvent cement shall have VOC content of 490 g/L or less.
2. Adhesive primer shall have VOC content of 550 g/L or less.
3. Solvent cement and adhesive primer shall comply with testing and product requirements of South Coast Air Quality Management District, Rule 1168.

G. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

1. PVC solvent cement shall have VOC content of 510 g/L or less.
2. Adhesive primer shall have VOC content of 550 g/L or less.
3. Solvent cement and adhesive primer shall comply with testing and product requirements of South Coast Air Quality Management District, Rule 1168.

2.06 VALVES AND FITTINGS FOR POTABLE WATER SYSTEMS

A. General:

1. Provide valves and fittings conforming to lead-free requirements of California Health and Safety Code Section 11 68 75.

a. Provide valves listed to NSF/ANSI 61-G or NSF/ANSI 372 for valve materials for potable-water service.

1) Exception: Main distribution gate valves above 1-1/2 inches located underground outside building are not required to conform lead-free requirements of California Health and Safety Code Section 11 68 75.

B. Gate Valves:

1. General: Furnish valves in copper lines with adapters to suit valve/line requirements.
2. 1-1/2 inches and smaller: Minimum 200 psi CWP, bronze body, threaded bonnet, rising or non-rising stem, solid wedge, threaded or solder ends, conforming to MSS SP-80. Milwaukee UP148, UP149, Nibco T-113-LF, S-113-LF, or equal.
3. 2 inches through 3 inches: Minimum 200 psi CWP, bronze body, threaded bonnet, non-rising stem, solid wedge, threaded or solder ends, conforming to MSS SP-80. Nibco T-113-LF, S-113-LF, or equal.
4. Main distribution gate valves underground outside building above 1-1/2 inches:

a. Underground valves 2 inches thru 12 inches: 250 psi, iron body, Non-rising stem, bolted bonnet, resilient wedge valves, conforming to AWWA C509, equipped with operating nuts, Mueller Series 2360, Nibco F-619-RW-SON, or equal.

1) Underground valves 3 inches and smaller may be furnished with operating nuts or hand-wheels, and with Ring-Tite joint ends.
2) Furnish and deliver to Owner one wrench of each size required for operating underground valves.

C. Ball Valves:

1. 2 inches and smaller: 600 psi CWP, cast bronze or brass body, full port, two piece, threaded ends, and reinforced PTFE seal, conforming to MSS SP-110. Nibco T-685-80-LF, Milwaukee UPBA400, Apollo 77C-LF10, Kitz 868, or equal.
2. 2-1/2 inches: Apollo 77C-LF10, or equal.

D. Swing Check Valves:

1. Minimum 200 psi CWP, bronze or brass body, suitable for regrinding, threaded ends, conforming to MSS SP-80. Milwaukee UP509, Nibco T-413LF, Kitz 822T, or equal.

E. Butterfly Valves:

1. General: Tight closing, full lug type, with resilient seat suitable for minimum working pressure of 200 psig, conforming to MSS SP-67. Bi-direction dead end service with downstream flange removed.
2. Provide valves with the following:

a. Seats: suitable for 40 degrees F for cold water service and 250 degrees F for hot water service. Seats shall cover inside surface of body and extend over body ends.
b. Bodies: ductile iron or cast iron.

c. Discs: Bronze or stainless steel.
d. Stems or Shafts: Stainless steel. Install valves with stems horizontal.
e. Control Handles: Suitable for locking in any position or with 10 degree or 15 degree notched throttling plates to hold valve in selected position. Provide extended necks to compensate for insulation thickness. Provide gear operator for valves 5 inches and larger.

3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. 2 through 12 inches: Watts Regulator Co., model DBF-03.

F. Silent Check Valves (for use on pump discharge):

1. General: Provide spring loaded check valves at pump discharge of all pumps.

a. 2 inches and smaller: Minimum 300 psi CWP, bronze body, Apollo 61LF, Milwaukee UP548-T, or equal.
b. 2-1/2 inches and larger: Class 250, cast iron body, suitable for regrinding, Mueller 103MAP, or equal.

G. Calibrated Balancing Valves:

1. General: Calibrated orifice ball type rated for 400 psig maximum operating pressure and 250 degrees F. maximum operating temperature.

a. Body: Brass.
b. Ball: 304 Stainless Steel.
c. Seat: Glass and Carbon filled TFE.
d. End Connections: Threaded.
e. Pressure Gage connections: Integral capped readout valves with internal check valves and drain port, for use with portable pressure differential meter.
f. Handle Style: Dial, with memory stops to retain set position.

2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. 3 Inch and Smaller: Bell & Gossett model CB, “LF” series.

2.07 VALVES AND FITTINGS FOR NON-POTABLE WATER, COMPRESSED AIR, AND GAS SYSTEMS

A. Gate Valves:

1. 2-1/2 inches and smaller: Class150, bronze body, union bonnet, rising stem, solid wedge, threaded or solder ends, conforming to MSS SP-80. Hammond IB641, IB648, Nibco T-134, S-134, Milwaukee 1151, 1169, or equal.
2. 3 inches and larger: Class 125, iron body, bronze mounted, bolted bonnet, non-rising stem, solid wedge, flanged ends, conforming to MSS SP-70. Hammond IR-1138, Nibco F619, Milwaukee F2882A, Stockham G-612, or equal.

3. Underground valves 2 inches thru 12 inches: 250 psi, iron body, Non-rising stem, bolted bonnet, resilient wedge valves, conforming to AWWA C509, equipped with operating nuts, Mueller Series 2360, Nibco F-619-RW-SON, or equal.

    a. Underground valves 3 inches and smaller may be furnished with operating nuts or hand-wheels, and with Ring-Tite joint ends.
    b. Furnish and deliver to Owner one wrench of each size required for operating underground valves.

B. Ball Valves:

1. 2 inches and smaller: 600 psi CWP, 150 psi SWP, cast bronze body, full port, two piece, threaded ends, and reinforced PTFE seal, conforming to MSS SP-110. Nibco T585-70, Milwaukee BA-400, Stockham T-285, or equal.
2. 2-1/2 inches and larger: Class 150, carbon steel body, full port, two piece, stainless steel vented ball, flanged ends, and reinforced PTFE seal, conforming to MSS SP-72. Nibco F-515-CS-F-66-FS, Milwaukee F20-CS-15-F-02-GO-VB, or equal.
3. Compressed Air Services: 600 psi CWP, 150 psi SWP, bronze body, full port, three piece, threaded ends, and reinforced PTFE seal, conforming to MSS SP-110. Nibco Model T-595-Y, Milwaukee BA-300, or equal.

C. Swing Check Valves: Class 125 or 150, bronze body, suitable for regrinding, threaded ends, conforming to MSS SP-80. Stockham B-321, Milwaukee 509, Nibco T-433, or equal.

D. Butterfly Valves:

1. General: Tight closing, full lug type, with resilient seat suitable for minimum working pressure of 200 psig, conforming to MSS SP-67. Bi-direction dead end service with downstream flange removed.
2. Provide valves with the following:

    a. Seats: Suitable for 40 degrees F for cold water service and 250 degrees F for hot water service. Seats shall cover inside surface of body and extend over body ends.
    b. Bodies: Ductile iron or cast iron.
    c. Discs: Bronze or stainless steel.
    d. Stems or Shafts: Stainless steel.
    e. Control Handles: Suitable for locking in any position or with 10 degree or 15 degree notched throttling plates to hold valve in selected position. Provide extended necks to compensate for insulation thickness. Provide gear operator for valves 5 inches and larger.

3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. 2 through 12 inches: Milwaukee Valve, CL series, Nibco, Inc., Model LD2000-3, or equal.

E. Silent Check Valves (for use on pump discharge):

1. General: Provide spring loaded check valves at pump discharge of all pumps.
2. 2 inches and smaller: 250 psi CWP, bronze body, Nibco Model T-480, Milwaukee 548-T, or equal.

3. 2-1/2 inches and larger: Class 250, cast iron body, wafer style, suitable for regrinding. Nibco Model F960, Milwaukee 1400, Mueller 103MAP, or equal.

F. Calibrated Balance Valves (Symbol CBV): Provide globe style valves for precision regulation and control rated 175 psi for sizes 2-1/2 inches through 12 inches and rated 240 psi for bronze sizes 2 inches and below. Each valve shall have two metering/test ports with internal check valves and protective caps. All valves must be equipped with visual position readout and concealed memory stops for repeatable regulation and control.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Bell & Gossett Circuit Setter Plus.
b. Armstrong CBV.
c. Flow Design Inc. Accusetter.
d. Tour & Andersson.
e. Circuit Sensor with butterfly valve above 3 inches.
f. Illinois Series 5000 through 2 inches.

G. Flow Control Valves: Automatic pressure compensating flow control valves shall be Griswold, Flow Design, Inc., or equal.

H. Building Gas Shut-Off Valves:

1. 2 inches and smaller: Provide 175 psi SWP ball valve, CSA listed, full port, lockwing type, with AGA painted grey finish. Jomar 175-LWN, or equal.
2. Above 2 inches: Provide ReSun D-126, Key Port, or equal, lubricated plug cock, CSA listed, rectangular port, full pipe area, 125 psi SWP, flanged ends. Provide T-Handle socket wrench and adapter fittings as required for operation of valves. Provide one package of spare lubricant sticks, sizes as required for valve sizes. Lubricant shall be the product recommended by valve manufacturer for use with type of gas conveyed by the piping system.
3. Provide valves same size as upstream piping. Make any reduction in size of gas piping downstream of shutoff valves.

I. Gas Shut-off Valve Above Grade:

1. 2 inches and smaller: Provide Milwaukee BB2-100, Jomar T-100NE, or equal, ball valve, CSA listed, full port.
2. Above 2 inches: Provide ReSun D-126, Key Port, or equal, CSA listed, rectangular port, full pipe area, 125 psi SWP, flanged ends. Provide T-Handle socket wrench and adapter fittings as required for operation of valves. Provide one package of spare lubricant sticks, sizes as required for valve sizes. Lubricant shall be the product recommended by valve manufacturer for use with type of gas conveyed by the piping system.
3. Provide valves same size as upstream piping. Make any reduction in size of gas piping downstream of shutoff valves.

J. For Gas Service Below Grade:

1. Lubricated plug cocks: ReSun Model D-126, Key Port, or equal, lubricated plug cock, CSA listed, rectangular port, full pipe area, 125 psi SWP, flanged ends. Provide extended lubrication stem, arranged to allow for lubrication of the valve from grade. The extension must be constructed to allow for lubrication of the valve and for operation of the valve from grade. Provide T-Handle socket wrench and adapter fittings as required for operation of valves. Provide one package of spare lubricant sticks, sizes as required for valve sizes. Lubricant shall be the product recommended by valve manufacturer for use with type of gas conveyed by the piping system.

    a. Provide flanged ends on valves installed below grade. Connect to polyethylene piping with flanges and stainless steel bolts.
    b. Anchor each valve flange to valve box with welded angle iron, or provide vertical stiff leg, minimum 18 inches into earth.
    c. Provide Central Double O Seal Transition Fittings, or equal, flanged style for connection between valve and piping system.
    d. Wrap valve, flanges and exposed pipe with PASCO Specialty & Mfg., Inc., or equal tape wrap, installed in accordance with requirements listed under “Pipe Protection”.

2. Molded polyethylene body ball valves: Nordstrom Valves - Polyvalve II for sizes 1-1/4 inches to 2 inches, and Polyvalve for sizes 2 inches and larger, or equal. Valves 1 inch and smaller shall be listed lubricated plug cocks, with transition fittings..

    a. Provide stub ends to match SDR of the piping, arranged for butt fusion welding. Provide valve body material to suit the adjacent piping system.
    b. Provide wrench to suit the valve operator.

K. Seismic Gas Shut-Off Valves: Certified by State of California and compliant with ASCE 25. Provide standard or high pressure model as required to match site gas pressure. Provide unit arrangement per Drawings schedule and details.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Little Firefighter Corporation, models NAGV, VAGV, and AGV.
    b. Seismic Safety Products, LLC, Northridge series.

2.08 DOMESTIC WATER PIPING SPECIALTIES

A. Hose Bibbs:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

    a. Acorn Engineering Co.
    b. Woodford Manufacturing Co.

2. Hose Station: Leonard THS-25-VB-CW, Symmons, or equal.

B. Wall Hydrants:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

    a. Acorn Engineering Co.
    b. Woodford Manufacturing Co.
    c. Mifab, Inc.

C. Water Hammer Arrestors:

1. Provide water hammer arrestors conforming to lead-free requirements of California Health and Safety Code Section 11 68 75, with nesting type bellows contained within a casing having sufficient displacement volume to dissipate the calculated kinetic energy generated in the piping system. Water hammer arrestors shall be sized for type and number of fixtures served. Provide all stainless steel shell construction with stainless steel bellows and threaded connection to water system.
2. Water hammer arrestors shall be certified under P.D.I. Standard WH201 and by ASSE Standard 1010.
3. Select units in accordance with the requirements of Plumbing and Drainage Institute Standard P.D.I. WH201. Install above ceilings or behind wall access door at each plumbing fixture, or where plumbing fixtures are installed in groups, at each group of fixtures.
4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Josam Company, series 75000.
    b. Smith (Jay R.) Mfg. Co., Hydrotrol 5005-5050.
    c. Mifab, series WHB.

D. Water Filters:

1. Provide Cuno Incorporated, Aqua Pure model AP510, or equal, point of use water filters, conforming to lead-free requirements of California Health and Safety Code Section 11 68 75, in locations indicated on Drawings.

    a. Provide model AP517 filter cartridge at each location, with 5 micron rating and 2,000 gallon rating, to remove sediment, rust, scale and chlorine taste and odor from incoming water. 2 gallon per minute capacity.
    b. Provide one spare cartridge for each unit provided.

E. Reduced Pressure Backflow Preventers for Potable Water Systems:

1. Provide reduced pressure principle backflow preventer conforming to lead free requirements of California Health and Safety Code Section 11 68 75.

    a. Reduced-pressure principle backflow preventer assembly, consisting of shutoff valves on inlet and outlet, and strainer on inlet., Backflow preventer shall include test cocks, and pressure differential relief valve located between two positive seating check valves. Construct in accordance with ASSE Standard 1013.

b. Manufacturers: Subject to compliance with requirements and local water authorities having jurisdiction, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1) 2 inches and smaller: Wilkins 975XL2, Febco LF825YRP, Watts LF919.
2) 2-1/2 thru 10 inches: Wilkins 475AXL, Febco LF860RP.
3) 2-1/2 and 3 inches: Watts LF009.

2. Provide LeMeur, Hot-Box, WattsBox, or equal, two piece reinforced aluminum, fiberglass, welded angle with expanded metal, backflow preventer enclosure, sized to suit the size of backflow preventer. Install on concrete pad, in accordance with manufacturer's written installation instructions.
3. Provide substantial padlock and chain to lock valves in open position, and turn key over to Project Inspector.

a. Padlocks shall be as specified under Section 08 70 00.
b. Chain shall be of carbon steel, 3/8 inch wire diameter, fully welded links and weight of 140 pounds per 100 lineal feet. Chain shall be hot galvanized.

4. Provide capped connections at each test cock. Install in accordance with requirements of Authority Having Jurisdiction.
5. For units installed within buildings, provide drain, connected to unit, to collect spillage from atmospheric vent. Run drain to nearest floor sink or drain.
6. Provide two concrete filled, 6-inch diameter pipe bollards to protect all exposed piping from motor vehicle damage.

F. Reduced Pressure Backflow Preventers for Non-Potable Water Systems:

1. Refer to Section 21 10 00 for backflow preventers for fire protection service.
2. Provide reduced-pressure principle backflow preventer consisting of assembly, including shutoff valves on inlet and outlet, and strainer on inlet, equal to Febco 825Y or 880, as required Wilkins, Aames, or equal. Backflow preventer shall include test cocks, and pressure differential relief valve located between two positive seating check valves. Construct in accordance with ASSE Standard 1013.
3. Provide LeMeur, Hot-Box, or equal, two piece backflow preventer enclosure, sized to suit the size of backflow preventer. Install on concrete pad, in accordance with manufacturer's written installation instructions.
4. Provide substantial padlock and chain to lock valves in open position, and turn key over to Project Inspector.

a. Padlocks shall be as specified under Section 08 70 00.
b. Chain shall be of carbon steel, 3/8 inch wire diameter, fully welded links and weight of 140 pounds per 100 lineal feet. Chain shall be hot galvanized.

5. Provide capped connections at each test cock. Install in accordance with requirements of Authority Having Jurisdiction.
6. For units installed within buildings, provide drain, connected to unit, to collect spillage from atmospheric vent. Run drain to nearest floor sink or drain.

7. Provide two concrete filled, 6-inch diameter pipe bollards to protect all exposed piping from motor vehicle damage.
8. Manufacturers: Subject to compliance with requirements and local water authorities having jurisdiction, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Ames.
    b. Febco Sales, Inc.
    c. Watts Regulator Company.
    d. Clow.

G. Double Check Valve Backflow Preventers:

1. Refer to Section 21 10 00 for backflow preventers for fire protection service.
2. Provide double detector check valve assembly consisting of two spring loaded brass check valves, two cast iron bronze fitted gate valves and four test cocks, equal to Febco Model 856 or 876 as required. Construct in accordance with ASSE Standard 1048.
3. Provide LeMeur, Hot-Box, or equal, two piece backflow preventer enclosure, sized to suit the size of backflow preventer. Install on concrete pad, in accordance with manufacturer's written installation instructions.
4. Provide substantial padlock and chain to lock valves in open position and turn key over to Project Inspector.

    a. Padlocks shall be as specified under Section 08 70 00.
    b. Chain shall be of carbon steel, 3/8 inch wire diameter, fully welded links and weight of 140 pounds per 100 lineal feet. Chain shall be hot galvanized.

5. Provide capped connections at each test cock. Install in accordance with requirements of Authority Having Jurisdiction.
6. Provide two concrete filled, 6 inch diameter pipe bollards to protect all exposed piping from motor vehicle damage.
7. Provide Christy, or equal, utility box sized as required to suit backflow assembly, complete with two piece reinforced concrete lid, concrete extensions, insulation and other construction details shown on the drawings.
8. Manufacturers: Subject to compliance with requirements and local water authorities having jurisdiction, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Ames.
    b. Febco Sales, Inc.
    c. Watts Regulator Company.
    d. Clow.

H. Potable Water Pressure-Regulating Valve:

1. Provide pressure-regulating valves, single-seated, direct-operated type, bronze body, integral strainer, complying with requirements of ASSE Standard 1003, and the lead-free requirements of California Health and Safety Code Section 11 68 75. Size for maximum flow rate and inlet and outlet pressure indicated on Drawings.

2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Cla-Val Company.
    b. Watts Regulator Company.

I. Thermostatic Water Temperature Control Valve:

1. Provide thermostatic water temperature control valve conforming to lead free requirements of California Health and Safety Code Section 11 68 75, with size as noted on Drawings, complete with union angle strainer checkstops. Valves shall be thermostatic type, with a maximum temperature setting as follows:
2. Provide surface recessed semi-recessed mounted, white enameled or stainless steel cabinet with locking door for control valves. Including:

    a. Control valve cabinet and valve shall be provided as a package, and include thermostatic water mixing valve, thermometer, safety checkstops, volume control valve and internal piping.

3. Where indicated on drawings, provide a temperature alarm system, utilizing a micro-processor based controller and solid state temperature controller. Provide audible and visual indication of high and low temperature set points. Provide required hardware and wiring for a complete operating system.

    a. Provide isolation transformer for control of the alarm system.
    b. Provide solenoid valve and shock absorber, installed and wired to the alarm module.

4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Leonard Valve Company.
    b. Lawler Manufacturing Co., Inc.
    c. Powers.

J. Relief Valves:

1. Provide relief valves as indicated, of size and capacity as selected by Contractor for proper relieving capacity, in accordance with ASME Boiler and Pressure Vessel Code.
2. Combined Pressure-Temperature Relief Valves: Bronze body, test lever, thermostat, complying with ANSI A21.22 listing requirements for temperature discharge capacity. Provide temperature relief at 210 degrees F, and pressure relief at 150 psi.
3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Watts Regulator Company.
    b. Cash (A.W.) Valve Manufacturing Corporation.
    c. Zurn Industries, Inc.; Wilkins-Regulator Division.

K. Trap Primers:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

    a. MiFab, Inc.
    b. Precision Plumbing Products.
    c. Sioux Chief Manufacturing Company.

L. Water Meter:

1. Provide and install prefabricated water meter and bypass assembly, sized as indicated on the Drawings, complete with strainer, adapter, couplings, spool piece and test nipple. The meter shall be compound type, with two measuring chambers and a single billing register. Pipe materials used in construction of the assembly shall be ductile iron, and the meter shall be bronze with stainless steel trim.
2. Install the meter and accessories in a Christy, Brooks, or equal, series "R" pit Model R37, 4 feet by 7 feet by 3 feet deep; complete with 4 piece checker plate parkway lid (screw down type), and 8 inch round meter reading lid. Install meter in accordance with the requirements of the Authority Having Jurisdiction.
3. Manufacturers: Subject to compliance with requirements and local water authorities having jurisdiction, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

    a. Badger Meter, Inc.
    b. Sensus North America Water.
    c. Neptune Technology Group.
    d. Hershey Meters.

2.09 GAS PIPING SPECIALTIES

A. Gas Pressure Regulating Valves:

1. Provide single-stage, spring-loaded, corrosion-resistant gas pressure regulators, with die-cast aluminum or cast iron body, complying with ANSI Z21.80. Unit shall be with atmospheric vent, internal relief overpressure protection, threaded ends for 2 inches and smaller, flanged ends for 2-1/2 inches and larger. For inlet and outlet gas pressures, specific gravity, and volume flow refer to Drawings schedule.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

Size	Manufacturer/Model
1/2 inch	Elster (American, Singer) model 1213B Itron (Actaris, Slumberger, Sprague) model B42R.
3/4 thru 1-1/4inches	Elster (American, Singer) model 1813C

	Sensus (Ivensys, Equimeter, Rockwell) model 143-80-12 Itron (Actaris, Slumberger, Sprague) models B42R, B57R, B58R
1-1/2 thru 2 inches	Elster (American, Singer) models 1813, 1813B Sensus (Ivensys, Equimeter, Rockwell) model 243 Itron (Actaris, Slumberger, Sprague) models B43SR, B34R, B38R

B. Gas and Air Outlets:

1. Gas Outlets: Deck mounted Chicago 982-907BC duplex, T&S Brass, or equal; deck mounted Chicago 980-907BC single, or equal, deck-mounted Chicago 984-907BC, four outlets, or equal. Provide integral check valve, and single lever handle in compliance with ADA requirements.
2. Air Outlets: Panel mounted Chicago 986-937CH; deck-mounted Chicago 980-937CH, T&S Brass, or equal. Provide integral check valve, and single lever handle in compliance with ADA requirements.
3. Air Hose Valve: Lincoln 815 coupler and 11659 nipple, Grover, or equal, with ball valve on inlet. Refer to drawing details for additional requirements. Provide Wilkerson Model CB6-04-000 air pressure regulator, or equal.
4. Hose Reels: Lincoln Model 85062, Grover or equal. Provide heavy-duty type with delivery hose, universal swivel, ball stop, shut-off valve, control valve and filter as required. Connect services to reels with ball valve.

2.10 DRAIN AND WASTE PIPING SPECIALTIES

A. Cleanouts:

1. General: Install cleanouts of same diameter as pipe (4 inch maximum) in all horizontal soil and waste lines where indicated and at all points of change in direction. Cleanouts shall be located not less than 18 inches from building construction so as to provide sufficient space for rodding. No horizontal run over 50 feet inside buildings or 100 feet outside buildings shall be without cleanout, whether shown on Drawings or not. Provide two-way cleanouts where indicated on drawings, and whenever sanitary sewer exits building. All two-way cleanouts shall have (2) risers, each in opposing directions.

   a. Provide cleanouts in waste drop from each sink and urinal.
   b. Provide one wrench for each size and type of cleanout used. Turn over to Owner at completion of the project, and obtain receipt. Place receipt in Operation and Maintenance Manuals.

2. Cleanouts in floor and in concrete sidewalks: Ducco Cast Iron with nickel bronze top, clamping collar and ABS plastic plug: Zurn ZN-1400-KC, or equal, with square or round top to suit floor construction.
3. Cleanouts in composition floors: Zurn ZN-1400-X-DX, or equal (nickel bronze top).

4. Cleanouts in concealed, aboveground cast-iron soil or waste lines: Zurn Z-1440A, or equal, with ABS plastic plug.
5. Cleanouts in walls: Zurn Z-1441 or Z-1443, or equal, with stainless steel cover. Provide long sweep elbow or combination wye at connection to riser and install with surface of cleanout within ½ inch of front face of finished wall.

    a. Where space does not permit the above installation, provide Zurn Z-1446, or equal, with stainless steel access cover, and vandal resistant screw.
    b. Install face of cleanout plug within 1/2 inch of front face of finished wall.

6. Cleanouts exterior to building in landscaped areas: Zurn Z-1449-BP, or equal, cleanout ferrule with tapered bronze plug. Where located at grade, provide 18 by 18 by 6 inch concrete pad; Trowel concrete smooth and edge; set flush with finished grade.
7. Cleanouts in drive areas: Zurn -1400-HD-KC, or equal, with heavy-duty top and ABS plastic plug.
8. Cleanouts in acid waste systems: Zurn ZN-1404, or equal, cleanout access housing, with ductile cast iron body and nickel bronze top. Extend acid waste piping within the cleanout, and terminate with threaded cap. Secure acid waste pipe inside cleanout access housing with setscrews provided.

B. Floor Drains:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

    a. J.R. Smith.
    b. MIFAB.
    c. Watts.
    d. Zurn.

C. Floor Sinks:

1. Floor Sinks: Provide anchoring flange (seepage pan) at all floor sinks, and provide flashing clamp in locations where floor membrane is used. Provide cast iron "P" trap and trap primer connection at P-Trap.
2. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

    a. J.R. Smith.
    b. MIFAB.
    c. Watts.
    d. Zurn.

D. Hopper Drains:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. Zurn.
b. J.R. Smith.

E. Catch Basin:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. Brooks.
b. J.R. Smith.
c. Old Castle Precast.
d. Watts.
e. Zurn.

F. Backwater Valves:

1. Provide Zurn Model Z-1090 J. R. Smith 7012, or equal flapper type backwater valve where indicated on drawings. Install in accordance with manufacturer's recommendations.
2. Provide Christy Model B16, Brooks, or equal utility box, 12 inches by 22 inches size, for installation of backwater valve.
3. Provide Zurn Model Z-1091, J.R. Smith 7070, or equal terminal type backwater valve, and install in catch basin piping at the outlet of the catch basin.

G. Roof Drains and Overflow Drains:

1. See Architectural Drawings for drain style to be used.
2. Provide offset downspout boots where required for connection of exposed sheet metal downspouts to underground cast iron or PVC piping.
3. Provide rainwater leader nozzles on overflow piping. Nozzle body shall be bronze with threaded inlet and bronze wall flange with mounting holes. Size nozzle to match connected rainwater leader.
4. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. J.R. Smith.
b. Mifab.
c. Zurn.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which plumbing piping systems are to be installed. Do not proceed with Work until unsatisfactory conditions have been corrected in manner acceptable to Contractor.

B. Make all arrangements for the utilities required. Pay all costs involved in obtaining the services including gas service and meter, water meter, pressure reducing valve, access boxes, street work. Connect to site utilities. Verify the location of all services. No extra cost will be allowed if services are not as shown.

C. Determine sanitary sewer and storm drain location and elevation at all points of connection before installing any piping. Notify Architect immediately if indicated grades cannot be maintained.

D. At time of final connection, and prior to opening valve to allow pressurization of water and gas piping from existing systems, on site or off site, perform a pressure test to indicate static pressure of existing systems. If pressure on water piping is greater than 80 psi, or gas pressure is not as indicated on Contract Documents, inform Architect immediately. Do not allow piping systems to be pressurized without written consent of the Architect.

3.02 INSTALLATION OF WATER PIPING

A. Run all water piping generally level, free of traps or unnecessary bends, arranged to conform to the building requirements, and to suit clearance for other mechanical work such as ducts, flues, conduits, and other work. No piping shall be installed so as to cause unusual noise from the flow of water therein under normal conditions.

B. Provide manufactured water hammer arrestors, sized and installed in accordance with Plumbing and Drainage Institute Standard PDI WH201.

1. Locate water hammer arrestors at every plumbing fixture, or, where fixtures are located in groups, at every group of fixtures, and as indicated on Drawings.
2. Install water hammer arresters above accessible ceilings, or install access doors for service.

C. In freezing locations arrange water piping to drain as shown.

D. Install piping on room side of building insulation.

E. Check final location of rubber rings within couplings on PVC water piping with gauge or as recommended by manufacturer. Make connection to valves with cast iron adapters connected to water pipe with cast iron couplings. Furnish and install anchors or thrust blocks.

F. For all faucets, hose bibbs, or other water outlets delivering industrial hot and/or cold water, provide a sign, permanently mounted, indicating "CAUTION: NON-POTABLE WATER, DO NOT DRINK". Each sign shall be permanently engraved with black uppercase letters on a yellow background. Letters shall be minimum 1-1/4 inch high.

3.03 INSTALLATION OF SANITARY AND STORM DRAINAGE SYSTEMS

A. Make joints in PVC sewer pipe with PVC-type couplings and rubber rings.

B. Check final location of rubber rings within the couplings with gauge or as recommended by the manufacturer. Make joints between PVC pipe and cast iron pipe or fittings using cast iron adapter fittings, installed as recommended by the manufacturer.

1. Ring-Tite cast iron pipe fittings may be used in lieu of standard fittings. Make connection to valves with cast iron adapters connected to the pipe with PVC couplings.

C. Sewer Piping: Run all horizontal sanitary drain piping inside of building on a uniform grade of not less than 1/4 inch per foot unless otherwise noted or later approved. Unless otherwise noted on the plans, piping shall have invert elevations as shown and slope uniformly between given elevations.

D. Storm Drain Piping: Run all horizontal storm drain piping inside of building on a uniform grade of not less than 1/4 inch per foot. Unless otherwise noted on the plans, piping shall have invert elevations as shown and slope uniformly between given elevations.

E. Install rainwater leader nozzles at exposed bottom of leaders where they spill onto grade.

F. Run all drainage piping as straight as possible and provide easy bends with long turns; make all offsets at an angle of 45 degrees or less.

G. Grade all vent piping so as to free itself quickly of any water condensation.

H. Where possible, join groups of vent risers together with one enlarged outlet through roof. Maintain minimum of 10 foot horizontal or 3 foot vertical clearance from air intakes.

I. Install drip pan under storm drain piping, sanitary drain piping, and vent piping that must be run over kitchen areas.

J. Hubless Cast Iron Joints: Comply with coupling manufacturer's installation instructions.

K. PVC DWV pipe and fittings shall be installed in accordance with ASTM D2321 and ASTM F1668.

L. Auger out all new gravity piping systems all the way out to the first manhole. Also applies to connection of new gravity piping systems to existing site utilities. Contractor to provide camera service and deliver to district video evidence of all new gravity piping systems being free and clear of any debris and/or obstructions.

3.04 INSTALLATION OF GREASE WASTE PIPING SYSTEMS

A. Install to comply with all manufacturers’ recommendations.

B. All buried pipe shall be bedded in and backfilled with 4 inches of sand, and installed as recommended by manufacturer.

C. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Maintain continuous pressure test on piping installed below grade, until all work has progressed to above grade.

D. Electrofusion joints: Make polypropylene drainage piping joints according to ASTM F 1290.

3.05 INSTALLATION OF ACID WASTE PIPING SYSTEMS

A. Install to comply with all manufacturers’ recommendations.

B. All buried pipe shall be bedded in and backfilled with 4 inches of sand, and installed as recommended by manufacturer.

C. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Maintain continuous pressure test on piping installed below grade, until all work has progressed to above grade.

D. Electrofusion joints: Make polypropylene drainage piping joints according to ASTM F 1290.

E. Connection to Building Sewer: At point of connection of acid waste piping to building sewer, provide fitting of same material as acid waste piping.

3.06 INSTALLATION OF NATURAL GAS PIPING

A. Install natural gas piping in accordance with Division 22 Basic Plumbing Materials and Methods sections.

B. Use sealants on metal gas piping threads that are chemically resistant to natural gas. Use sealants sparingly, and apply to only male threads of metal joints.

C. Remove cutting and threading burrs before assembling piping.

D. Do not install defective piping or fittings. Do not use pipe with threads that are chipped, stripped, or damaged.

E. Plug each gas outlet, including valves, with threaded plug or cap immediately after installation and retain until continuing piping or equipment connections are completed.

F. Ground gas piping electrically and continuously within project, and bond tightly to grounding connection.

G. Install drip-legs in gas piping where indicated and where required by code or regulation.

1. Install "Tee" fitting with bottom outlet plugged or capped at bottom of pipe risers.
2. Where gas supply is connected to equipment with flexible connectors, install drip-leg in piping on downstream side of flexible connector, and install shut off valve on piping on upstream side of flexible connector.

H. Install piping with 1/64 inch per foot (1/8 percent) downward slope in direction of flow.

I. Install piping parallel to other piping.

J. Paint all gas piping installed in exposed exterior locations. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods, article, Painting.

K. Provide shutoff valve downstream of meter.

L. Provide exterior shutoff valve at each building. Provide sign affixed to wall at valve location reading: “Gas Shut-Off.” Size and location of the sign shall be as required by the Authority Having Jurisdiction.

Where gas piping enters a building in more than one location, exterior shutoff valves shall have a permanently attached metal tag identifying the area served by that valve, in addition to sign on wall.

M. Provide watertight Schedule 40 PVC conduit to protect gas piping installed below covered walk, covered driveways, and where noted on Drawings. Extend sleeve at least 12 inches beyond any area where it is required to be installed, and terminate with valve box extended to grade, and marked "GAS".

N. Maintain minimum of 12 inch clearance between gas piping and steam piping above 200 degrees F.

3.07 PIPE JOINTS AND CONNECTIONS

A. General:

1. Cutting: Cut pipe and tubing square, remove rough edges or burrs. Bevel plain ends of steel pipe.
2. Remove scale, slag, dirt and debris from inside and outside of pipe before assembly.
3. Boss or saddle type fittings or mechanically extracted tube joints will not be allowed.

B. Threaded Pipe: 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 thread compound to external pipe threads: Rectorseal No. 5, Permatex No. 1, or equal.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

C. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

D. Joint Construction for Solvent-Cemented Plastic Piping: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements. Apply primer.
2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
3. PVC Piping: Join according to ASTM D 2855.

E. Copper Pipe and Tubing (Except pneumatic control piping): All joints shall be brazed according to ASME Section IX, Welding and Brazing Qualifications, except domestic water piping 1-1/4 inches and smaller when not buried in the ground or concrete and type DWV plumbing piping may be soldered.

1. Soldered joints: Apply water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828.

F. Cast Iron Soil Pipe:

1. No-Hub fittings shall be made with a torque wrench.
2. Hub joints shall be with Ty-Seal couplings.

3. Wrought iron, steel, or copper pipe shall have a ring or part of a coupling screwed on to form a spigot end if caulked into a joint.
4. Connect cast iron sewer piping to outside service pipe with cast iron or vitrified LOP reducers or increasers as required. Caulking of smaller pipe into the larger without a reducer or increaser will not be permitted.

G. Welded Pipe:

1. Make up with oxyacetylene or electric arc process.
2. All line welds shall be of the single "V" butt type. Welds for flanges shall be of the fillet type.
3. Where the branch is two pipe sizes smaller than the main or smaller, Bonney Weldolets, Threadolets, Nibco, or equal, may be used in lieu of welding tees.

H. PVC Sewer and Drainage Pipe (outside building as allowed only): Four inches and larger shall be bell and spigot, assembled in accordance with manufacturer's recommendations. Joint shall be tested in accordance with ASTM D3212. Solvent weld joints below 4 inches in size, schedule 40 PVC with matching fittings, assembled per manufacturer’s instructions.

I. Polyethylene and Polypropylene Pipe: Assemble with fusion joints in strict accordance with manufacturer's instructions.

J. Make joints in PVC water pipe with PVC couplings and rubber rings, Manville Ring-Tite, PW Pipe, or equal. Check final location of rubber rings with the couplings with gauge or as recommended by the manufacturer. Make joints between PVC pipe and cast iron pipe or fittings using cast iron or PVC adapter fittings, installed as recommended by the manufacturer. Ring-Tite PVC or cast iron pipe fittings may be used in lieu of standard fittings. Make connection to valves with cast iron adapters connected to the water pipe with PVC couplings.

K. Flexible Connections:

1. Furnish and install Thermo Tech., Inc. F/J/R, Metraflex, or equal, flexible couplings with limiter bolts on piping connections to all equipment mounted on anti-vibration bases, on each connection to each base mounted pump and where shown. Couplings shall be suitable for pressure and type of service.
2. Anchor piping securely on the system side of each flexible connection.

3.08 INSTALLATION OF VALVES

A. Install valves as indicated on Drawings and in the following locations:

1. Shutoff Valves: Install on inlet of each plumbing equipment item, and on inlet of each plumbing fixture, and elsewhere as indicated.
2. Drain Valves: Install on each plumbing equipment item located to completely drain equipment for service or repair. Install at base of each riser, at base of each rise or drop in piping system, and elsewhere indicated or required to completely drain potable water system.
3. Provide gate or globe valves on inlet and outlet of each water heater or pump.

B. General:

1. Valves shall be full line size unless indicated otherwise on Drawings.
2. Install horizontal valves with valve stem above horizontal, except butterfly valves.
3. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
4. Locate valves for easy access and provide separate support where necessary.
5. Install valves in position to allow full stem movement.
6. Install exposed polished or enameled connections with special care showing no tool marks or exposed threads.
7. Butterfly valves conforming to the paragraph “Butterfly Valves” may be used in lieu of gate or globe valves for locations above grade.
8. Ball valves conforming to the paragraph “Ball Valves” may be used in lieu of gate valves for locations above grade for services 2-1/2 inches and smaller.
9. Valves 2-1/2 inches and smaller (except ball valves) in nonferrous water piping systems may be solder joint type with bronze body and trim.
10. Rigidly fasten hose bibbs, hydrants, fixture stops, compressed air outlets, and similar items to the building construction.

C. Gate Valves:

1. Furnish valves in copper lines with adapters to suit valve / line requirements.
2. Underground gate valves:

    a. Underground valves 3 inches and smaller may be furnished with operating nuts or hand-wheels, and with Ring-Tite joint ends.
    b. Furnish and deliver to Owner one wrench of each size required for operating underground valves.

D. Swing Check Valves: Install in horizontal position with hinge pin level.

E. Butterfly Valves: Install with stems horizontal.

F. Silent Check Valves: Install in horizontal or vertical position between flanges.

G. Calibrated Balancing Valves: Install calibrated balancing valves per manufacturers’ recommendations, including requirements for straight pipe lengths at valve inlet and outlet.

H. Gas Shut-Off Valves:

1. Provide line size ball valve in gas line to each appliance.
2. Provide line size ball valve in gas line, to be used as emergency shut-off for science classrooms. Install valve in locking box where indicated on the drawings.
3. Provide line size electric solenoid gas valve in gas line to kitchen equipment (if not supplied with appliance) under Type 1 hood. Interlock with hood fire alarm system.

I. Valve Adjustment: 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.

3.09 INSTALLATION OF CLEANOUTS

A. Cleanouts: Install in piping as indicated, as required by California Plumbing Code, at each change in direction of piping greater than 45 degrees. Install at maximum intervals of 50 feet for piping 4 inches and smaller and 100 feet for larger piping inside buildings, and at base of each conductor.

B. Flashing Flanges: Install flashing flange and clamping device with each cleanout passing through water resistant membrane.

3.10 INSTALLATION OF FLOOR DRAINS AND FLOOR SINKS

A. Install drains in accordance with manufacturer's written instructions and in locations indicated. Install floor drains with lip of drain slightly below finished floor to ensure drainage. Install floor sinks flush with finished floor. Coordinate with other trades to ensure that floor slopes to drain. Provide flashing flange and clamping device with each drain passing through water resistant membrane.

B. Install vented P-trap below each drain. Where trap primers are indicated, install trap primer connection in the P-trap.

3.11 INSTALLATION OF ROOF DRAINS AND OVERFLOW DRAINS

A. Install roof drains and overflow roof drains in accordance with manufacturer's written instructions and in locations indicated.

B. Coordinate with roofing as necessary to interface roof drains with roofing work.

3.12 INSTALLATION OF HOPPER DRAINS

A. Install hopper drain in wall, in sheet metal box, with access door.

1. Size access door and box to suit the size required for hopper drain and trap primer, and solder all seams of box. Seal all penetrations to box with non-hardening waterproof sealant. Provide locking door in occupied spaces.

B. Grind top and sides of funnel, if required, to suit wall thickness.

3.13 BACKFLOW PREVENTER INSTALLATION

A. Install backflow preventers where indicated on Drawings. Provide drain connection available from the manufacturer at drain connection, pipe drain outlet to the nearest floor drain.

1. Where drain pans are shown on the Drawings, pipe drain pan outlet to nearest floor drain.

3.14 TRAP PRIMER INSTALLATION

A. Install as indicated in manufacturers printed literature, with 1/2 inch, Type L, hard copper piping to trap primer connection on floor drains and floor sinks where indicated on Drawings. At Contractor’s option, Type K annealed copper tubing without joints may be used be used below slab only. See Section 22 00 50 for pipe protection requirements for below slab copper piping/tubing.

B. Install trap primer piping with 1/4 inch per foot slope, to insure that the line will drain fully to the floor drain or floor sink.

1. Provide ball valve to the inlet at each trap primer location.

C. Install trap primer and distribution unit exactly as called for in manufacturers printed installation instructions. Connect to domestic water piping from the top of the water line, in order to prevent foreign material from entering directly into primer assembly.

D. Mount trap primer in wall, in sheet metal box, with Karp or equal access door. Size access door and box to suit valve operation, and solder all seams of box. Seal all penetrations to box with non-hardening waterproof sealant. Provide locking door where installed in occupied spaces.

E. Where one trap primer will be used for more than one trap, provide a distribution unit with feeder piping for a maximum of four traps sized for equal pressure drop to each trap.

3.15 INSTALLATION OF GAS PRESSURE REGULATING VALVES

A. Install as indicated; comply with utility requirements. In locations where regulators are installed in confined spaces, pipe atmospheric vent to outdoors, full size of outlet. Install gas shutoff valve upstream and downstream of each pressure-regulating valve.

3.16 GAS PIPING EQUIPMENT CONNECTIONS

A. Connect gas piping to each gas-fired equipment item, with union, drip leg and shutoff gas cock full size of supply line shown. Reduce only at connection to equipment. Comply with equipment manufacturer's instructions.

1. Route gas vent and gas relief to outside.
2. Gas shutoff valve shall be placed as close as possible to equipment in a location where it can be serviced. Distance from equipment to valve shall not exceed 6 feet.

3.17 EQUIPMENT CONNECTIONS

A. Piping Runouts to Fixtures: Provide hot and cold water piping runouts to fixtures of sizes indicated.

B. Mechanical Equipment Connections: Connect hot and cold water piping system and gas piping system to mechanical equipment as indicated, and provide with shutoff valve and union for each connection.

3.18 KITCHEN EQUIPMENT INSTALLATION

A. Coordinate all work with Specification Section for kitchen equipment.

B. All equipment shall be fully connected.

C. Furnish and install all required "P" traps.

D. Provide stops on all hot and cold water lines at equipment, in an accessible position. Include lines to kettle and range swing faucets.

E. Water pressure for dishwasher and glass-washer to be 25 pound maximum. Provide pressure reducing valves on water line to washers.

F. All floor openings are to be sealed watertight.

G. Indirect waste lines required for standard or fabricated items of kitchen equipment, except sinks, shall be furnished and installed by the kitchen equipment contractor.

H. Provide all sink drains. All indirect drains shall terminate above floor sinks at least 1-1/2 times ID of drain line and shall be so set that flare will not spill on floor area.

I. Provide approved vacuum breaker or anti siphon device on water lines to equipment wherever required.

J. Provide gas pressure regulators for modular front manifold cooking equipment assemblies. Pressure regulators shall be adjustable from 2 inch to 7 inch water column and shall be set for approximately 6 inches W.C. at manifold connection.

K. All gas pressure regulators shipped loose with gas fired equipment shall be installed by plumbing contractor.

L. The kitchen equipment contractor will provide all equipment trim including faucets and sink wastes and swing faucets at kettles all to be installed by Plumbing contractor.

M. All horizontal piping lines connected to equipment shall be run at the highest possible elevation not less than 6 inches above floor. Piping rough-in shall be stubbed in walls wherever possible.

N. Vent piping for waste lines shall be concealed wherever possible and vertical vents for island or free-standing equipment shall be avoided. Any required exposed vents shall be submitted to the Architect for approval.

O. Kitchen equipment contractor to furnish coffee maker. Plumbing contractor shall provide a cold water connection terminating in a 3′-0″ length of 1/4 inch OD soft copper tubing with a 1/4 inch female flare fitting on the end.

P. Fire protection systems for ventilators and cooking equipment are furnished and installed by kitchen equipment contractor unless shown otherwise on the drawings. Gas valves which are a part of the fire protection systems are furnished only. Plumbing Contractor shall install gas valves.

Q. Connect movable gas-fired cooking equipment utilizing flexible gas connection system.

3.19 LABORATORY EQUIPMENT AND CASEWORK INSTALLATION

A. Coordinate all work with Specification Section for Laboratory Equipment and Casework.

B. Furnish and install all required P-traps. Traps shall be Enfield, Fuseal, or equal.

C. Provide stops on all hot and cold water lines at equipment in an accessible position.

D. Seal floor openings watertight.

E. Provide approved vacuum breaker or anti-siphon device on water lines to equipment wherever required.

F. All horizontal piping lines connected to equipment shall be run at the highest possible elevation not less than 6 inches above floor. Piping rough-in shall be stubbed in walls wherever possible.

G. Vent piping for waste lines shall be concealed and vents for island or freestanding equipment shall be looped.

3.20 DOMESTIC WATER SYSTEM STERILIZATION

A. Clean and disinfect new or altered hot and cold water piping connected to domestic water systems using methods prescribed by the Health Authority. If the Health Authority does not prescribe methods, clean and disinfect new or altered hot and cold water piping using methods given in the California Plumbing Code.

1. A water treatment company that has a current state EPA license to apply disinfectant chlorine in potable water shall perform the procedure.

3.21 CARE AND CLEANING

A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures, and trim that are installed as part of this work. Remove labels from stainless steel sinks, except 316 stainless steel sink labels should be retained to confirm that the correct material has been provided. Leave systems and equipment in satisfactory operating condition.

3.22 OPERATIONAL TESTS

A. Test each piece of equipment to show that it will operate in accordance with indicated requirements.

3.23 TESTING AND BALANCING

A. See Section 23 05 93 of Specifications for testing and balancing requirements.

3.24 CLEANING UP

A. Upon completion of Work remove materials, equipment, apparatus, tools, and the like, and leave premises clean, neat, and orderly.

END OF SECTION

SECTION 22 40 00

PLUMBING FIXTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Water supplies and stops.
2. Plumbing fixture hangers and supports.
3. Refrigerator ice maker outlet boxes.
4. Dishwasher air gap fittings.
5. Solids interceptors.
6. Washing machine hose/supply boxes.

1.02 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 22 00 50 Basic Plumbing Materials and Methods.

1.03 ACTION SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Product Data: Submit manufacturer's specifications for plumbing fixtures and trim, including catalog cut of each fixture type and trim item furnished.

1.04 INFORMATIONAL SUBMITTALS

A. Refer to Section 22 00 50, Basic Plumbing Materials and Methods.

1.05 CLOSEOUT SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Maintenance Data: Submit maintenance data and parts lists for each fixture type and trim item, including instructions for care of finishes. Include this data in Operation and Maintenance Manual.

1.06 QUALITY ASSURANCE

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Plumbing Fixture Standards: Comply with applicable portions of the following codes and requirements for all work in this Section:

1. 2025 California Building Code – CBC
2. 2025 California Plumbing Code – CPC

3. 2025 California Health and Safety Code
4. American National Standards Institute - ANSI
5. Federal Standards - F.S.
6. National Sanitary Foundation – NSF International

C. ANSI Standards: Comply with ANSI/NSF 61, “Drinking Water System Components – Health Effects.”

D. PDI Compliance: Comply with standards established by Plumbing and Drainage Institute pertaining to plumbing fixture supports.

E. UL Labels: Provide water coolers that have been listed and labeled by Underwriters' Laboratories.

F. ARI Labels: Provide water coolers that are rated and certified in accordance with applicable Air-Conditioning and Refrigeration Institute Standards.

G. Americans with Disabilities Act (ADA).

H. California Green Building Standards Code Requirements:

1. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets.
2. Single Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

PART 2 - PRODUCTS

2.01 PLUMBING FIXTURES

A. General: Provide factory fabricated fixtures of type, style and material indicated. For each type fixture, provide fixture manufacturer's standard trim, carrier, seats, and valves as indicated by their published product information; either as designed and constructed, or as recommended by the manufacturer, and as required for a complete, installation. Where more than one type is dedicated, selection is Contractor's option; but, all fixtures of same type must be furnished by single manufacturer.

1. Take special care with the roughing-in and finished plumbing where batteries of fixtures occur.
2. Take location and mounting heights for roughing-in from Architectural Drawings.
3. Follow schedule on Plumbing Drawings for roughing-in connections. Set roughing-in for all fixtures exactly as per measurements furnished by the manufacturers of the fixtures used.
4. Roughing-in for lavatories and sinks shall be brought in through the wall under the centerline of the drain from the fixture wherever possible and as close to the fixture as possible.

2.02 MATERIALS

A. Provide materials that have been selected for their surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, roller marks, foundry sand holes, stains, discoloration, or other surface imperfections on finished units are not acceptable.

B. Where fittings, trim and accessories are exposed or semi-exposed, provide, chromium plated 17 gauge seamless brass and match faucets and fittings. Provide 17 gauge seamless copper or brass where not exposed.

C. Handles on all faucets and stops shall be all metal chromium plated.

D. NSF Standard: Comply with NSF 61 and NSF 372 for supply-fitting materials that will be in contact with potable water.

2.03 PLUMBING FITTINGS, TRIM AND ACCESSORIES

A. Water Outlets: At locations where water is supplied (by manual, automatic or remote control), provide commercial quality faucets, valves, or dispensing devices, of type and size indicated, and as required to operate as indicated.

1. Include manual shutoff valves and connecting stem pipes to permit outlet servicing without shut-down of water supply piping systems.

B. P-Traps: Include IAPMO approved removable P-traps where drains are indicated for direct connection to drainage system. P-Traps shall be less trap screw cleanout, and incorporate a chrome plated cast brass body, brass connection nuts, 17 gauge seamless brass wall return and chrome plated wall escutcheon to match trap finish.

C. Carriers: Provide cast iron wall mounted supports for fixtures of graphitic gray iron, ductile iron, or malleable iron as indicated.

D. Fixture Bolt Caps: Provide manufacturer's standard exposed fixture bolt caps finished to match fixture finish.

E. Escutcheons: Where fixture supplies and drains penetrate walls in exposed location, provide chrome-plated cast brass escutcheons with setscrews.

F. Aerators: Provide aerators of types approved by Health Departments having jurisdiction. Delete aerators where not allowed by CPC for health care occupancies.

G. Comply with additional fixture requirements contained in Fixture Schedule shown on the drawings.

2.04 MANUFACTURERS

A. In accordance with California Plumbing Code, provide indelibly marked or embossed manufacturers name or logo, arranged so as to be visible after installation.

B. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following:

1. Vitrified China Plumbing Fixtures:

a. American Standard, U.S. Plumbing Products.
b. Eljer Plumbingware Div., Wallace-Murray Corp.

c. Kohler Co.
d. VitrA.

2. Modular Lavatories:

a. Bradley.
b. Acorn.
c. Willoughby Industries, Inc.

3. Plumbing Trim:

a. McGuire Manufacturing Co., Inc.
b. Delta Commercial.
c. Chicago Faucet Co.
d. T&S Brass and Bronze Works, Inc.

4. Flush Valves:

a. Sloan Valve Co.
b. Pfister

5. Faucets:

a. Chicago Faucet Co.
b. T&S Brass and Bronze Works, Inc.
c. Delta Commercial.

6. Fixture Seats:

a. Church Seat Co.
b. Bemis Mfg. Co.
c. Beneke Corp.

7. Water Coolers and Drinking Fountains:

a. Haws Corporation.
b. Elkay Mfg. Co.

8. Service Sinks:

a. American Standard.
b. Kohler Co.
c. Williams Serviceptor.
d. Florestone.
e. Acorn.

9. Stainless Steel Sinks:

a. Elkay Mfg. Co.
b. Just Mfg. Co.

c. Haws Corporation.

10. Showers:

a. Acorn.
b. Bradley.
c. Symmons.
d. Powers.

11. Emergency Equipment:

a. Haws Corporation.
b. Gardian.
c. Symmons.
d. Bradley.
e. Encon.

12. Fixture Carriers:

a. Josam Mfg. Co.
b. J. R. Smith.
c. Tyler Pipe; Wade Div.
d. Zurn Industries; Hydromechanics Div.
e. Mifab, Inc.

2.05 FLUSH VALVE REQUIREMENTS

A. Metering flush valves where required and specified shall be non-hold open type with exposed parts chrome plated. Conform to all codes and manufacturers' recommendations. All diaphragms are to have multiple filtered bypass and be chloramine resistant synthetic rubber with internal components suitable for l80 degree hot water to l50 pounds pressure, plastic or leather diaphragm not acceptable.

2.06 FIXTURE CONNECTIONS

A. Make connection between fixtures and flanges on soil pipe absolutely gastight and watertight with neoprene type gaskets (wall hung fixtures) or bowl wax (floor outlet fixtures). Rubber gaskets or putty will not be permitted.

B. Provide fixtures not having integral traps with P-traps of chromium-plated 17 gauge cast brass, with 17 gauge seamless brass wall return, connected to concealed waste in wall and sanitary fittings. Provide IAPMO approval for trap, and provide less trap screw cleanout.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Dearborn Brass, Commercial series with brass nuts.
b. Delta Commercial.
c. McGuire Manufacturing Co., Inc.

C. Connections from stacks or horizontal wastes to wall or floor finish for wastes from lavatories, urinals, sinks, and drinking fountains and connection between floor drains and traps shall be IPS 85 percent red brass pipe.

D. Plumbing fixture traps connected to special waste systems shall be constructed of materials to suit the waste system.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Orion.
b. Enfield

E. Unions on waste pipes on fixture side of traps may be slip or flange joints with soft rubber or lead gaskets. Traps shall rough in full size to waste and vent connection, using deep escutcheon plate to cover wall penetration. Compression adaptor extensions or sweat adaptors are not acceptable.

2.07 WATER SUPPLIES AND STOPS

A. Each fixture, except hose bibbs, shall have stop valves installed on water supply lines.

B. Provide water supplies to fixtures with compression shut-off stops with threaded inlets and lock shield-loose key handles. Provide combination fixtures with compression stop and threaded inlet on each water supply fitting. Provide lock shield-loose key handle for each stop.

C. Provide 1/2 inch riser tubes with reducing coupling for fixtures, unless otherwise noted.

D. Provide cast brass escutcheon.

E. Furnish shut-off valves on hose bibbs where directly connected to mains with no intervening valves.

F. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. McGuire Manufacturing Company, Inc., model LFH2167LK.
2. T & S Brass and Bronze Works, Inc., model B-1305.

2.08 PLUMBING FIXTURE HANGERS AND SUPPORTS

A. Floor-affixed supports for off-the-floor plumbing fixtures shall comply with ASME A112.6.1M.

B. Residential type fixture supports are not acceptable.

C. Install floor mounted water closets with J.R. Smith, Zurn, or equal government pattern cast iron closet flanges with brass bolts, nuts, washers, and porcelain caps secured with Spackle.

D. Install the following fixtures on wall mounted concealed arm support carrier securely anchored to wall.

1. Wall hung lavatories.

2. Drinking fountains.

2.09 PLUMBING FIXTURES

A. Install all plumbing fixtures at height indicated on Architectural Drawings. Where mounting height is not indicated, install at height required by Code.

B. Special Requirements For Accessible Fixtures:

1. Operating handle or valve for accessible water closets, urinals, lavatories, and sinks shall operate with less than 5 pounds force. Metering faucets shall be adjusted to operate between 10 and 15 seconds.
2. Insulate exposed waste piping and domestic water supplies below accessible fixtures with CBC access code compliant molded “closed-cell” vinyl covers. Covers shall be installed using vandal resistant fasteners and must be removable. Covers shall meet flame spread rating not to exceed 25 and smoke density not to exceed 50 when tested in accordance with ASTM E-84, and shall comply with the requirements of California Code of Regulations, Title 24. Plumberex – Handy Shield, Johns Manville – Zeston 2000, or equal.

C. Refrigerator Ice Maker Outlet Boxes:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. Guy Gray.
b. Water-Tite.

D. Dishwasher Air Gap Fittings:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. Zurn Industries, LLC.
b. Dearborn Brass.

E. Solids Interceptors:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. J.R. Smith Mfg. Co.

F. Washing Machine Hose/Supply Boxes:

1. Manufacturers: Drawing schedules indicate Basis of Design products. Subject to compliance with requirements, provide product indicated on Drawings, or comparable product by one of the following, or equal:

a. Acorn Engineering Co.

PART 3 - EXECUTION

3.01 PRODUCT HANDLING AND PROTECTION

A. Deliver packaged materials in their original, unopened wrapping with labels intact. Protect materials from water, the elements and other damage during delivery, storage and handling.

3.02 PREPARATORY PROVISIONS

A. The Contractor is responsible for the examination and acceptance of all conditions affecting the proper construction and/or installation of the Work of this Section. Do not proceed until all unsatisfactory conditions have been corrected. Commencing work will be construed as acceptance of all conditions by the Contractor as satisfactory for the construction and/or installation of the Work.

3.03 INSPECTION AND PREPARATION

A. Examine roughing-in work of domestic water and waste piping systems to verify actual locations of piping connections prior to installing fixtures. Also examine floors and substrates, and conditions under which fixture work is to be accomplished. Correct any incorrect locations of piping, and other unsatisfactory conditions for installation of plumbing fixtures. Do not proceed with work until unsatisfactory conditions have been corrected.

B. Install plumbing fixtures of types indicated where shown and at indicated heights; in accordance with fixture manufacturer's written instructions, roughing-in drawings. Ensure that plumbing fixtures comply with requirements and serve intended purposes. Comply with applicable requirements of the National Standard Plumbing Code pertaining to installation of plumbing fixtures.

C. Fasten plumbing fixtures securely to supports or building structure; and ensure that fixtures are level and plumb. Secure plumbing supplies to blocking behind or within wall construction so as to be rigid, and not subject to pull or push movement.

D. Install CBC accessible fixtures in accordance with Chapter 4 California Plumbing Code, and Chapters 11A and 11B California Building Code.

3.04 FAUCET INSTALLATION

A. Each fixture, except hose bibbs, shall have a stop valve installed on water supply lines to permit repairs without shutting off water mains.

B. Adjust metering faucets to run for 10 to 15 seconds.

3.05 CLEAN AND PROTECT

A. Clean plumbing fixtures of dirt and debris upon completion of installation.

B. Protect installed fixtures from damage during the remainder of the construction period.

C. Grout voids between all fixtures and adjacent surfaces with white Dow Silicone Sealant, arranged to shed water.

3.06 FIELD QUALITY CONTROL

A. Upon completion of installation of plumbing fixtures and after units are water pressurized, test fixtures to demonstrate capability and compliance with requirements. When possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.

3.07 EXTRA STOCK

A. General: Furnish special wrenches and other devices necessary for servicing plumbing fixtures and trim to Owner with receipt. Furnish one device for every ten units installed.

B. Flush Valve Diaphragms: Furnish one diaphragm for every three units installed.

C. Faucet Cartridges: Furnish minimum four sets per project, or one set per five units installed, whichever is greater.

END OF SECTION

SECTION 22 50 00

PLUMBING EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. Commercial electric water heaters.
2. Instantaneous electric water heaters.
3. Booster Heaters.
4. Gas fired water heaters.
5. Expansion tanks.
6. In-line domestic hot water recirculation pumps.
7. Neutralizing basin.
8. Concrete grease interceptors.
9. Plaster interceptors.
10. Oil interceptor.
11. Air compressors.
12. Air dryer.
13. Manholes.
14. Catch basin.
15. Liquefied petroleum tanks.
16. Insulation.

1.02 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Section 22 00 50 Basic Plumbing Materials and Methods.

C. Section 22 05 48 Plumbing Vibration and Seismic Control.

D. Section 22 05 53 Plumbing Identification.

1.03 ACTION SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Product Data: Submit manufacturer's plumbing equipment specifications, installation and start-up instructions, capacity and ratings, with selection points clearly indicated.

1.04 INFORMATIONAL SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

1.05 CLOSEOUT SUBMITTALS

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Maintenance Data: Submit maintenance data and parts lists for each item of plumbing equipment. Include "trouble-shooting" maintenance guides. Include this data in Operation and Maintenance Manual.

1.06 QUALITY ASSURANCE

A. For additional requirements, refer to Section 22 00 50, Basic Plumbing Materials and Methods.

B. Trade names or catalog numbers stated herein indicates grade or quality of materials desired.

C. Dimensions, sizes, and capacities shown are minimum and shall not be changed without permission of Architect.

D. UL and NEMA Compliance: Provide electric motors and electrical components required as part of plumbing equipment, which have been listed and labeled by Underwriters Laboratories and comply with NEMA standards.

E. Pump types and sizes regulated by the US Department of Energy's "Energy Conservation Standards for Pumps" 10 CRF Parts 429 and 431 shall be marked with a compliant PEI_{CL} or PEI_{VL} (Pump Energy Index, constant or variable load) value, basic model number, and RPM on the nameplate. Regulated pumps shall be listed in the Hydraulic Institute (HI) Energy Rating database (er.pumps.org) and be assigned an Energy Rating as defined in the HI 40.5 program guide.

F. CEC Compliance: Comply with California Electrical Code (Title 24, Part 3) as applicable to installation and electrical connections of ancillary electrical components of plumbing equipment.

G. ANSI Compliance: Comply with ANSI Z223.1 (NFPA 54) "National Fuel Gas Code", as applicable to installation of gas-fired water heaters.

H. CSA/UL Labels:

1. Provide gas-fired water heaters that have been listed and labeled by CSA International or Underwriters Laboratories, certifying design according to ANSI Z21.10.1-CSA 4.1 standards governing storage-type water heaters with input ratings of 75,000 BTU/hr. or less.

2. Provide gas-fired water heaters that have been listed and labeled by CSA International or Underwriters Laboratories, certifying design according to ANSI Z21.10.3-CSA 4.3 standards governing storage-type water heaters with input ratings of greater than 75,000 BTU/hr.

I. ASME Relief Valve Stamps: Provide water heaters with safety relief valves bearing ASME valve markings.

J. ASME Code Symbol Stamps: For the following equipment, comply with ASME Boiler and Pressure Vessel Code for construction, and stamp with ASME Code symbol:

1. Water Heaters 200 MBH and greater.

K. California Energy Commission Compliance: Provide written confirmation of listing of all water heaters in the "Appliance Efficiency Database."

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials in their original, unopened wrapping with labels intact. Protect materials from water, the elements and other damage during delivery, storage and handling.

1.08 WARRANTY

1. Commercial Electric Water Heaters: Three-year minimum limited warranty on tank leakage.

2. Atmospheric Gas Fired Water Heaters: Three-year minimum limited warranty on tank.

3. Power Gas Fired Water Heaters: Three-year minimum limited warranty on tank.

4. Direct Vented Sealed Combustion Condensing Gas-Fired Water Heater: Three-year minimum limited warranty on tank.

5. Instantaneous Gas-Fired Water Heater: three-year minimum limited warranty on heat exchanger and parts.

PART 2 - PRODUCTS

2.01 MATERIALS

A. NSF Compliance: Fabricate and label equipment components that will be in contact with potable water to comply with NSF 61 and NSF 372.

B. Insulation products, including insulation, insulation facings, jackets, adhesives, sealants and coatings shall not contain polybrominated diphenyl ethers (PBDEs) in penta, octa, or deca formulations in amounts greater than 0.1 percent (by mass).

2.02 COMMERCIAL ELECTRIC WATER HEATERS

A. General: Provide commercial electric water heaters of size, capacity, and electrical characteristics indicated on Drawings. Comply with ASHRAE 90.1 for energy efficiency. Provide UL listing. Relief valve dip tube shall extend to within 3 inches of tank.

B. Heater: Working pressure of 150 psi, magnesium anode rod; glass lining on internal surfaces exposed to water.

C. Heating Elements: Heavy-duty, medium watt density, with incoloy sheath or zinc plated copper, thermostat stepped through magnetic contactor.

D. Safety Controls: Double-pole, manual-reset, high-limit, probe type electric water low water cutoff; both factory wired.

E. Jacket: Equip with full size control compartments with front panel opening. Insulate tank with vermin resistant polyurethane or glass fiber insulation. Provide outer steel jacket with bonderized undercoat and baked enamel finish.

F. Provide the following accessories:

1. Brass drain valve.

2. 3/4 inch temperature and pressure relief valve.

3. Thermometer.

G. Provide equal flow manifold for piping entering and leaving the water heaters. Manifold shall be provided as a standard option for the heaters proposed.

H. Controls: Adjustable immersion thermostat or surface mounted therm-o-disc; power circuit fusing.

I. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. Bradford White Corporation.

2. Smith, A.O. Water Products Co.; a division of A.O. Smith Corporation.

2.03 INSTANTANEOUS ELECTRIC WATER HEATERS

A. General: Wall mounted, microprocessor-controlled, electric heating style.

B. Standard: UL 499 for electric, tankless, (domestic-water heater) heating appliance.

C. Construction: Copper piping or tubing complying with NSF 61 and NSF 372 barrier materials for potable water, without storage capacity.

1. Connections: ASME B1.20.1 pipe thread.

2. Pressure Rating: 150 psig.

3. Heating Element: Resistance heating system.

4. Temperature Control: Flow-control fitting.

5. Safety Control: High-temperature-limit cutoff device or system.

6. Jacket: Aluminum or steel with enameled finish or plastic.

D. Support: Bracket for wall mounting.

E. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. Chronomite Laboratories, Inc.

2. Eemax, Inc.

2.04 BOOSTER HEATERS

A. General: Booster water heater shall be of the size and type shown on Drawings with stainless steel or glass lined tank, incoloy sheath or stainless steel element and all stainless steel jacket and casing, 100 psi working pressure, pressure reducing valve, check valve and strainer, magnetic contactors, temperature and pressure relief valve, temperature and pressure gauge all factory-mounted and wired, UL-approved, baked enamel stand or stainless steel stand, with control panel.

2.05 GAS FIRED WATER HEATERS

A. General: All units shall comply with the emissions requirements of the Air Quality Management District (AQMD) in which they are to be installed.

B. Atmospheric Gas Fired Water Heaters:

1. General: Provide commercial atmospheric gas-fired water heater of size, capacity, and electrical characteristics indicated on Drawings. Comply with ASHRAE 90.1 for energy efficiency. Provide UL or CSA International listing.

2. Heater: Working pressure of 150 psi, rigidly supported magnesium anode rod, glass lining on internal surfaces exposed to water. Provide gas pressure regulator, adjusted for operation on natural gas, with pressure rating to suit heater listing. Provide hand-hole cleanout through tank and jacket.

3. Jacket: Insulate tank with rigid polyurethane foam or fiberglass insulation. Provide heavy-gauge steel jacket and baked enamel finish.

4. Accessories: Provide brass drain valve and 3/4 inch temperature and pressure relief valve. Provide thermometer, installed in the top 1/3 of the tank or at hot water discharge at the tank.

5. Controls: Adjustable immersion thermostat with safety shutoff.

6. Vent: Furnish and install "Metalbestos", Selkirk, or equal, Type B vent, UL listed. Furnish complete with roof support, flashing, Briedert Type L, Metalbestos, or equal stainless stack cap, and all supports and accessories required for a complete installation.

7. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

   a. Bradford White Corporation.

   b. Smith, A.O. Water Products Co.; a division of A.O. Smith Corporation.

C. Power Gas Fired Water Heaters:

1. General: Provide commercial power gas-fired water heater of size, capacity, and electrical characteristics as noted on Drawings. Comply with ASHRAE 90.1 for energy efficiency. Provide UL or CSA International listing. Units with gas input above 200 MBH shall be ASME constructed and listed, stamped for 125 PSIG.

2. Heater: Working pressure of 150 psi, magnesium anode rod, glass lining on internal surfaces exposed to water.

3. Jacket: Insulate tank with vermin-proof glass fiber or polyurethane foam insulation. Provide heavy-gauge steel jacket and baked enamel finish.

4. Accessories: Provide brass drain valve and 3/4 inch temperature and pressure relief valve. Provide thermometer, installed in the top 1/3 of the tank or at hot water discharge at the tank.

5. Provide equal flow manifold for piping entering and leaving the water heaters. Manifold shall be provided as a standard option for the heaters proposed.

6. Controls: Adjustable immersion thermostat with safety shutoff.

7. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

   a. Bradford White Corporation.

   b. Smith, A.O. Water Products Co.; a division of A.O. Smith Corporation.

8. Vent: Furnish and install "Metalbestos", Selkirk, or equal, Model PS, all-steel vent, UL listed. Furnish complete with roof support, flashing, Briedert, Metalbestos, or equal, Type L stainless stack cap, .035" stainless steel inner pipe, and all supports and accessories required for a complete installation. All joints shall be sealed with silicone sealant as recommended by the manufacturer for pressure-tight joints.

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1) American Metal Products

2) Selkirk

3) Metalbestos

D. Direct Vented Sealed Combustion Condensing Gas-Fired Water Heater:

1. General: Provide commercial direct vented sealed combustion condensing gas-fired water heater of size, capacity, and electrical characteristics as noted on Drawings. Provide UL or CSA International listing. Design unit to conform to the following:

a. ASHRAE/IESNA 90.1.

b. California NOx emission requirements.

c. Units with gas input above 200 MBH shall be ASME constructed and listed, stamped for 150 PSIG.

d. Minimum efficiency of 95 percent.

2. Storage Tank Construction: Seamless steel with 150 psig working-pressure rating, glass lining on internal surfaces exposed to water.

3. Factory-Installed Storage Tank Appurtenances:

a. Anode Rods: Magnesium.

b. Jacket: Heavy-gauge steel with enameled finish.

c. Cleanout: Hand-hole cleanout though tank and jacket.

d. Burner: Low NOx, pre-mix powered type, down-fired configuration.

e. Insulation: Non-CFC foam.

f. Drain Valve: Brass construction.

g. Heat Exchanger Coil: Located within submerged combustion chamber.

h. Combination Temperature and Pressure Relief Valve.

i. Dielectric Fittings.

4. Accessories: Provide thermometer, installed in the top 1/3 of the tank or at hot water discharge at the tank.

5. Controls: Adjustable electronic immersion thermostat with safety shutoff.

6. Condensate Drain Piping: CPVC piping as defined in Section 22 10 00.

7. Vent and Exhaust Piping: CPVC piping as defined in Section 22 10 00

8. See equipment Schedule and details on Drawings for additional accessories and requirements.

9. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

   a. Bradford White Corporation.

   b. Smith, A.O. Water Products Co.; a division of A.O. Smith Corporation.

2.06 EXPANSION TANKS

A. Provide thermal expansion tanks of size and number as indicated on Drawings, conforming to lead-free requirements of California Health and Safety Code Section 11 68 75. Construct tank of welded steel for working pressure of 125 psi. Provide specially compounded flexible diaphragm securely sealed into tank to permanently separate air charge from system water, to maintain design expansion capacity.

   1. Tanks shall be IAPMO approved and listed for use with domestic water systems.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

   1. Amtrol, Inc.

   2. A.O. Smith Water Products Company.

   3. Watts Water Technologies, Inc.

2.07 IN-LINE DOMESTIC HOT WATER RECIRCULATION PUMPS

A. Provide lead-free in-line domestic water recirculation pumps where indicated on Drawings and of capacities as scheduled on Drawings. Pumps shall be third-party certified by an approved laboratory as complying with California Health and Safety Code Section 11 68 75.

B. Pumps shall be of the centrifugal type with non-overloading characteristics and shall not overload the motor above its nameplate horsepower rating under any operating condition. No allowance for service factor shall be used in pump selection. Motor horsepower shown is minimum; furnish larger motors if necessary to meet the non-overloading requirements.

C. Type: Horizontal, designed for 125 thru 150 psi maximum working pressure and 225 degrees F continuous water temperature.

D. Construction: Bronze casing, non-metallic impeller.

E. Shaft: Ceramic, supported by carbon bearings. Bearings shall be lubricated by the pumped water.

F. Motors shall have permanently lubricated ball bearings. Motors shall meet NEMA specifications. Motors shall have built-in thermal overload or impedance protection.

G. Provide control wiring between field-installed controls, indicating devices, and pump control panels as work of this section, complying with requirements of Division 26 sections:

1. Control wiring specified as work of Division 23 for Automatic Temperature Controls is work of that section.

H. Wire pumps to mechanical control circuits to shut down pump when building is not occupied. Where no control system is installed, furnish pump manufacturers standard timer to automatically turn off circulating pump when hot water is not required.

I. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. Grundfos Pumps Corporation.

2. Bell & Gossett, ITT Corporation.

3. Taco Incorporated.

4. Armstrong Pumps, Inc.

2.08 NEUTRALIZING TANKS

A. Plastic-Tank Neutralization Systems

1. Description: System for neutralizing chemical waste.

2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Orion Fittings; a Watts Water Technologies company.

b. Town & Country Plastics, Inc.

3. Controls: Factory wired and tested, 120 V ac, to operate probes, and to monitor pH of effluent; with wiring and electrical-power cord and plug.

4. Panel: NEMA 250, Type 4X enclosure unless otherwise indicated; with manufacturer's standard features, control devices, and indicators, but not less than the following:

a. Power light and on/off switch.

b. pH analyzer with programmable meter and high- and low-pH indicators, factory calibrated.

c. Analyser and sensor fault detection.

d. NEMA 5-15R audible and visual alarm with reset switch, with 4-20 mA output for remote indication.

e. Provide with contacts for connection to building energy management system.

5. Piping between Tanks: Polypropylene. Refer to Section 22 10 00, Plumbing Piping Systems.

6. Neutralization Tank: Polyethylene; with removable, gastight cover, heat-fused threaded sidewall inlet, outlet, and vent piping connections

a. Limestone: Chips or lumps, with more than 90 percent calcium carbonate content and 1- to 3-inch diameter.

7. Sampling Tank: Polyethylene; with removable, gastight cover, heat-fused threaded sidewall inlet, outlet, and vent piping connections, and opening in top for probe.

a. pH probe: Type and length suitable for sampling-tank size.

2.09 CONCRETE GREASE INTERCEPTORS

A. Furnish and install a concrete grease interceptor with minimum capacity as indicated on the drawings, complete as cataloged. Provide manholes to grade for access to each section. Provide gastight cast-iron ring and cover at grade for each manhole.

B. Provide concrete with an approved coating inside and outside.

C. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. M.C. Nottingham Company.

2. Jensen Precast.

2.10 PLASTER INTERCEPTORS

A. Furnish and install plaster interceptor with minimum capacity indicated on Drawings, complete as cataloged. Interceptor shall be all cast iron with acid-resistant coating on interior and exterior.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. Jay R Smith 8710-ABS.

2. Zurn Model Z-1180.

2.11 OIL INTERCEPTOR – COMPRESSOR LOCATIONS

A. Furnish and install Oil/Sediment interceptor with minimum capacity of 12 pounds of sludge, complete as cataloged. Interceptor shall be coated fabricated steel with acid-resistant coating on interior and exterior. Provide fabricated extension, anchor flange, and single grate.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. J.R. Smith 8925-F-ARC.

2. Zurn Model Z-1189.

2.12 AIR COMPRESSORS

A. Provide single package unit featuring belt driven rotary screw compressor. Compressor shall be driven by TEFC electric motor. Provide enclosed weatherproof casing and include factory wired starter, control panel with stop-start push buttons, indicator lights, gauges, run time meter and reset button.

1. Provide control panel with, discharge air pressure and lubricant discharge temperature, operating hours, start/stop switch, power on light, emergency stop button, and control safety system with compressor ON light.

2. Provide high air pressure shutdown switch, 3-phase motor overload protection, safety valve and oil sight glass. Compressor control shall be by a fully adjustable dual operating control providing idle time and time delay controls. Main air and oil piping shall be rigid steel with flexible connections. The unit shall be delivered with full operating charge of oil and shall be ready for full operation.

B. Provide ASME stamped receiver, pressure gauge. ASME Code pressure relief valve, tank drain, manual valve on main air line, intake filter and muffler, belt guards, and pressure reducing valve. Provide pipe line filter and refrigerated after-cooler.

C. Provide soundproof enclosure around compressor unit, complete with filter media on air intake, and locking access doors. Where installed in locations exposed to weather conditions, provide rain hood.

D. Furnish permit by State Division of Industrial Safety prior to project completion.

E. Manufacturer shall be Powerex, Kaeser, Quincey, or equal.

2.13 AIR DRYER

A. Air dryer shall be a single package refrigerated compressed air dryer with built in controls and push button graphic control panel. Unit shall be contained in a weatherproof cabinet.

B. Manufacturer shall be Kaeser, Quincy, or equal.

2.14 AIR COMPRESSOR CONDENSATE DRAIN SYSTEM

A. Provide high efficiency condensate drain system to automatically remove oil from compressed air condensate line. Install in accordance with manufacturer's recommendations.

B. Manufacturer shall be Kaeser, Quincy, or equal.

2.15 MANHOLES

A. Provide standard precast concrete as shown on the plans and specified herein. Where special details are shown on Drawings or vary from requirements stated herein, follow Drawings.

1. Provide manholes that comply with local utility company standards.

B. Manholes shall be 48 inch diameter base section size with a minimum wall thickness of 4 inches. Taper manhole to 24 inch diameter. All dimensions given above are inside diameters.

C. Install a minimum of two 6 inch and one 3 inch adjusting or grade rings on the top of manhole taper.

D. Manhole frames and cover shall be Teichert Precast, Pinkerton, Alhambra Foundry Company, or equal, 24 inch diameter clear opening, unless otherwise specified on the plans, in which case numbers given on plans shall be used. Indicate weight on the bottom outside of rim of cover, and machine seat of the frame sufficiently so that the cover will set evenly and firmly in place without rocking. Letter cover as required to identify service. Information as to finish grade elevations must be adhered to when setting manhole frame and cover.

E. Seal joints between base, manhole barrel, grade rings, taper section, and manhole frame to grade ring with Portland cement-sand-water grout or with resilient gasket material specifically formulated for such use. Make joints with care for watertight installation.

F. Extend sewer pipe through the concrete manhole walls at the invert elevations given on the Drawings. Provide PVC manhole adapter connections at the manhole wall. Adapters shall be arranged to eliminate leaks around the pipe entrance.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Indiana Seal.

b. CPK Products, Inc.

G. Accurately shape inverts of all manholes to a "U" section as shown on the Drawings, using Portland cement concrete of suitable mix to assure a smooth, dense surface. Align inverts through manholes to provide good hydraulic transitions, including changes in direction as required. Make joints between manhole walls and sewer pipe neat and watertight.

H. Provide manhole with polyproplyene coated steel safety type manhole steps of the Edison type manufactured by the Alhambra Foundry Company, Alhambra, California, or equal. Manhole steps shall be installed with a maximum spacing of 15 inches.

I. Where indicated on the drawings and where required by site conditions provide Santa Rosa Precast shallow manhole, or equal. Provide field poured base section, 48 inch diameter manhole section and 48 inch eccentric reducer slab for manhole. All other material and work, including cast iron frame and cover, grade rings, joints and gaskets, and formation of manhole base shall be in accordance with other manhole requirements.

2.16 CATCH BASIN

A. Shall be as detailed on the drawings. Santa Rosa Precast, Model BK, Brooks, or equal, with cast iron grate and locking device, depth as required, Provide 6 inch thick concrete base, 6" minimum width each side, grout drain line into box a minimum of 6 inches above bottom.

B. Fill bottom with cobbles for a minimum of 6 inches deep. Joints between sections shall be sealed with Ram-Nek, or equal, flexible plastic gaskets.

2.17 LIQUEFIED PETROLEUM TANKS

A. Furnish and install liquefied petroleum tanks with size as indicated on Drawings. Each tank, system, system component and all of the installation shall conform to NFPA Pamphlet #58 and applicable local regulations.

B. Design, construct and test tanks for 250 psi gauge working pressure, in accordance with ASME Code for Unfired Pressure Vessels, and provide code stamp or marking with indication of water capacity and working pressure.

C. Provide system nameplate stating whether system is designed for underground or above ground installation and name and address of supplier of system, and any other markings required by NFPA #58.

D. Support tanks on substantial concrete saddles or steel skids in such manner as to permit expansion and contraction and to prevent concentration of excessive loads on supporting portion of shell.

E. Paint tanks with reflective aluminum paint.

F. Design all components for LP gas service. Provide test and listing by Underwriters Laboratories, Inc., or other nationally recognized Testing Laboratory. Provide approval of other authority having jurisdiction.

G. Provide the following for each tank:

1. Tank liquid level gauging device of approved design.

2. Safety relief valve for tank.

3. Shut-off valves on all tank connections except safety valve. Shut-off valves shall be conspicuously marked.

4. Approved pressure reducing valve (capacity 650 GPH) on outlet of interconnecting tank manifold to reduce pressure in outgoing line to 15 psi gauge, and approved safety relief valve on low pressure side. Provide high pressure manifold of material, arrangement, etc., as recommended by Regulator Manufacturer.

H. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1. Roy E. Hanson Jr. Manufacturing.

2. American Welding and Tank.

2.18 INSULATION MATERIALS

A. General:

1. Insulation products, including insulation, insulation facings, jackets, adhesives, sealants and coatings shall not contain polybrominated diphenyl ethers (PBDEs) in penta, octa, or deca formulations in amounts greater than 0.1 percent (by mass).

2. Products shall not contain asbestos, lead, mercury, or mercury compounds.

3. 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.

4. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

5. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

6. Adhesives and sealants shall comply with testing and product requirements of South Coast Air Quality Management District, Rule 1168.

B. Insulation Materials:

1. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB.

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

1) CertainTeed Corporation.

2) Johns Manville.

3) Knauf Insulation.

4) Owens Corning.

C. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Design Polymerics.

b. Foster Brand; H. B. Fuller Construction Products.

c. Knauf Insulation.

2. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.

3. Service Temperature Range: 0 to plus 180 deg F.

4. Color: White.

D. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:

a. Design Polymerics.

b. Childers Brand; H. B. Fuller Construction Products.

c. Foster Brand; H. B. Fuller Construction Products.

d. Knauf Insulation.

2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.

3. Service Temperature Range: 0 to plus 180 deg F.

4. Color: White.

PART 3 - EXECUTION

3.01 EXAMINATION

A. The Contractor shall be responsible for the examination and acceptance of all conditions affecting the proper construction and/or installation of the Work of this Section and shall not proceed until all unsatisfactory conditions have been corrected. Commencing work shall be construed as acceptance of all conditions by the Contractor as satisfactory for the construction and/or installation of the Work.

3.02 ELECTRIC WATER HEATER INSTALLATION

A. Install electric water heaters as indicated, in accordance with manufacturer's installation instructions and in compliance with applicable codes.

B. Furnish wiring diagram to Electrical Installer. Refer to Division 26 for wiring of units, not work of this section.

C. Connect to hot and cold water lines with shutoff valve, check valve, and dielectric union in the cold water line, and ASME standard pressure and temperature relief valve and dielectric union in the hot water line. Connect drain and relief piping as noted on Drawings.

D. Start-up, test, and adjust electric water heaters in accordance with manufacturer's start-up instructions. Check and calibrate controls.

E. After installation has been completed, seal bottom of heaters without feet to floor with silicone sealer.

3.03 GAS-FIRED WATER HEATER INSTALLATION

A. Install gas-fired water heaters as indicated, in accordance with manufacturer's installation instructions and in compliance with applicable codes.

B. Furnish wiring diagram to Electrical Installer. Refer to Division 26 for wiring of units, not work of this section.

C. Connect to hot and cold water lines with shutoff valves and dielectric unions. Install ASME standard pressure and temperature relief valve. Connect drain and relief piping as noted on Drawings.

D. Start-up, test, and adjust water heaters in accordance with manufacturer's start-up instructions. Check and calibrate controls.

E. Install thermometer, in the top 1/3 of the tank or at hot water discharge at the tank.

F. Confirm that water heater proposed is suitably equipped to be brought into the building through building openings provided, and that heater may be installed and removed through building openings provided.

G. Additional requirements for direct vented sealed combustion condensing water heaters:

1. Install vent and exhaust piping for direct vented sealed combustion condensing gas-fired water heaters strictly in accordance with unit manufacturers’ recommendations.

2. Trap condensate drain line per manufacturers’ recommendations and run to nearest code-compliant point of disposal.

H. Additional requirements for gas fired instantaneous water heaters:

1. Install pressure relief valve at the hot water discharge of the unit.

2. Install vent and exhaust piping for instantaneous gas-fired water heaters strictly in accordance with unit manufacturers’ recommendations.

3.04 PUMP INSTALLATION

A. Install pumps where indicated, in accordance with manufacturer's published instructions, complying with recognized industry practices to ensure that pumps comply with requirements and serve intended purposes.

B. Provide floor-mounted pumps with a 6 inch high concrete base and anchor bolts as recommended by the pump manufacturer. Pumps shall be carefully shimmed level.

C. Provide access space around pumps for service as indicated, but in no case less than that recommended by manufacturer.

D. Install in-line pumps with support from overhead structure on each side of pump, or as indicated on Drawings.

E. Support piping from the building structure so as to prevent any strain on the pump casings. Provide a final check for perfect alignment of the piping connections after pump has been secured to its base. Provide valves, accessories, gauges, flexible connections, and supports as indicated.

F. Install electrical devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical Installer.

G. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 26 sections. Do not proceed with equipment start-up until wiring installation is complete and correct.

H. Check alignment, and where necessary, realign shafts of motors and pumps within recommended tolerances by manufacturer.

I. Lubricate pumps before start-up. Start-up in accordance with manufacturer's instructions.

J. Increase piping immediately at pump suction and discharge; flexible couplings and all valves shall be full line size.

K. Trim pump impeller to obtain the desired water flow after installation, without cost to Owner.

L. Pumps shall not be connected to piping before piping is thoroughly flushed and cleaned of all dirt and grit. After piping connections have been made, systems shall be filled before starting pumps. Pumps shall not be run dry under any circumstances.

3.05 NEUTRALIZATION SYSTEM INSTALLATION

A. Install neutralization systems as detailed on Drawings. Include full initial charge of limestone.

3.06 INTERCEPTOR INSTALLATION

A. Install interceptors as indicated, in accordance with manufacturer's installation instructions and in compliance with applicable codes.

B. Support: Anchor interceptors securely to substrate. Locate interceptors so that adequate clearance is provided to remove covers and sediment baskets. Set recessed units so top of cover is flush with finished grade.

C. Piping: Connect inlet and outlet piping to interceptors.

D. Refer to local standards for special installation requirements.

3.07 AIR COMPRESSOR INSTALLATION

A. Install air compressors as indicated, in accordance with manufacturer's installation instructions and in compliance with applicable codes.

B. Prior to initial test run of air compressor, provide lubrication, confirm satisfactory operation of water cooled after cooler, and post operating instructions in a prominent location near the unit.

3.08 MANHOLE INSTALLATION

A. Install manholes as indicated on Drawings, in accordance with manufacturer's installation instructions and in compliance with applicable codes.

3.09 INSULATION INSTALLATION

1. Insulation Installation on Pumps:

a. Fabricate metal boxes lined with insulation. Fit boxes around pumps and coincide box joints with splits in pump casings. Fabricate joints with outward bolted flanges. Bolt flanges on 6-inch centers, starting at corners. Install 3/8-inch- diameter fasteners with wing nuts. Alternatively, secure the box sections together using a latching mechanism. Do not enclose or insulate pump motor.

b. Fabricate boxes from G90 galvanized steel, at least 0.050 inch thick.

c. For below ambient services, install a vapor barrier at seams, joints, and penetrations. Seal between flanges with replaceable gasket material to form a vapor barrier.

3.10 DEMONSTRATION AND TRAINING

A. Provide a minimum of 16 hours of training and orientation of Owners staff in proper care and operation of Plumbing Equipment.

3.11 CARE AND CLEANING

A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures, and trim that are installed as part of this work. Leave systems and equipment in satisfactory operating condition.

3.12 OPERATIONAL TESTS

A. Test each piece of equipment to show that it will operate in accordance with indicated requirements.

3.13 CLEANING UP

A. Upon completion of Work remove materials, equipment, apparatus, tools, and the like, and leave premises clean, neat, and orderly.

3.14 EQUIPMENT INSULATION SCHEDULE

A. Domestic hot water recirculation pump insulation shall be the following:

1. Mineral-Fiber Board: Thickness equal to insulation thickness for connected pipes and 3-lb/cu. ft. nominal density.

END OF SECTION

SECTION 26 00 10

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Table of Contents, Division 26 - Electrical:

SECTION NO.	SECTION TITLE
260010	BASIC ELECTRICAL REQUIREMENTS
260060	POWER SYSTEM STUDY
260090	ELECTRICAL DEMOLITION
260519	BUILDING WIRE AND CABLE
260526	GROUNDING AND BONDING
260529	ELECTRICAL HANGERS AND SUPPORTS
260531	CONDUIT
260533	BOXES
260543	UNDERGROUND DUCTS AND STRUCTURES
260553	ELECTRICAL IDENTIFICATION
260942	DIGITAL LIGHTING CONTROL
262213	DRY TYPE TRANSFORMERS
262413	SWITCHBOARDS
262416	PANELBOARDS
262719	SURFACE RACEWAYS
262726	WIRING DEVICES
262736	ENERGY INFORMATION SYSTEMS
262816	OVERCURRENT PROTECTIVE DEVICES
262819	DISCONNECT SWITCHES
263100	PHOTOVOLTAIC POWER SYSTEMS
264313	SURGE PROTECTIVE DEVICES
265000	LIGHTING

B. Work included: This Section includes general administrative and procedural requirements for Division 26. The following administrative and procedural requirements are included in this Section to supplement the requirements specified in Division 01.

1. Quality assurance.
2. Definition of terms.
3. Submittals.
4. Coordination.
5. Record documents.
6. Operation and maintenance manuals.
7. Rough-in.

8. Electrical installation.
9. Cutting, patching, painting, and sealing.
10. Field quality control.
11. Cleaning.
12. Project closeout.

C. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete and operable installation.

1. General and supplementary conditions: Drawings and general provisions of Contract and Division 01 of the Specifications, apply to all Division 26 Sections.
2. Earthwork: Include trenching, backfilling, boring and soil compaction as required for the installation of underground conduit, in-grade pull boxes, vaults, lighting pole foundations, etc. Refer to Division 31, Earthwork.
3. Selective demolition: Nondestructive removal of materials and equipment for reuse or salvage as indicated. Also dismantling electrical materials and equipment made obsolete by these installations. Refer to Division 02, Selective Demolition.
4. Concrete work: Include forming, steel bar reinforcing, cast-in- place concrete, finishing and grouting as required for underground conduit encasement, light pole foundations, pull box slabs, vaults, housekeeping pads, etc. Also includes setting of floor boxes in existing concrete slabs, saw-cutting of existing slabs and grouting of conduits in saw-cut. Refer to Division 03, Concrete.
5. Miscellaneous metal work: Include fittings, brackets, backing, supports, rods, welding and pipe as required for support and bracing of raceways, luminaires, panelboards, distribution boards, switchboards, motor control centers, etc. Refer to Division 05, Miscellaneous Metals.
6. Miscellaneous lumber and framing work: Include wood grounds, nailers, blocking, fasteners and anchorage for support of electrical materials and equipment. Refer to Division 06, Rough Carpentry.
7. Moisture protection and smoke barrier penetrations: Include membrane clamps, sheet metal flashing, counter flashing, caulking and sealant as required for waterproofing of conduit penetrations and sealing penetrations in or through fire walls, floors, ceiling slabs and foundation walls. All penetrations through vapor barriers at slabs on grade shall be taped and made vapor tight. Refer to Division 07, Thermal and Moisture Protection.
8. Access panels and doors: Required in walls, ceilings, and floors to provide access to electrical devices and equipment. Refer to Division 08, Access Doors also, Division 05, Metals.
9. Painting: Include surface preparation, priming and finish coating as required for electrical cabinets, exposed conduit, pull and junction boxes, etc. where indicated as field painted in this Division. Refer to Division 09, Painting.
10. Luminaire supports: Provide slack support wire for luminaires installed in acoustical tile or lay-in suspended ceilings. Refer to Division 09, Acoustical Treatment.

D. Work furnished and installed under another Division requiring connections under this Division includes but is not limited to:

1. Electric motors.
2. Package mechanical equipment: fans, fan coil units, pumps, boilers, compressors, etc.
3. Flow switches and valve monitors for sprinkler system.
4. Elevator controllers.
5. Pre-wired electrified partition furniture.
6. Temperature control panel(s). (Line voltage only)
7. Irrigation controller(s). (Line voltage only)
8. FM-200 control panel. (Line voltage only)
9. Kitchen equipment and appliances.
10. Laboratory equipment.
11. Electric signage.
12. Electric door locks.
13. Electric heat trace tape.
14. Door hold-open/release devices.
15. Variable frequency drive units.
16. Chiller starters.
17. Motorized roll down/sliding doors and grills.
18. Motorized dock levelers.
19. Projection screens.

E. Items furnished under another Division, but installed and connected under this Division includes but is not limited to:

1. Wall mounted control stations for motorized roll down and sliding doors.
2. Electric fire sprinkler water flow bells.
3. Speed control switches for ceiling exhaust fans.

1.02 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements, or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the latest edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:

1. California Electric Code (CEC).
2. California Building Code (CBC).
3. California Fire Code (CFC).
4. California Mechanical Code (CMC).

D. Standards: Equipment and materials specified under this Division shall conform to the following standards where applicable:

ACI	American Concrete Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
CBM	Certified Ballast Manufacturers
ETL	Electrical Testing Laboratories
FS	Federal Specification
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IPCEA	Insulated Power Cable Engineer Association
NEMA	National Electrical Manufacturer's Association
UL	Underwriters' Laboratories

E. Independent Testing Agency qualifications:

1. Testing Agency shall be an independent testing organization that will function as an unbiased authority, professionally independent of Manufacturer, Supplier and Contractor, furnishing and installing equipment or system evaluated by Testing Agency.
2. Testing Agency shall be regularly engaged in the testing of electrical equipment, devices, installations, and systems.
3. Testing Agency shall meet Federal Occupational Safety and Health Administration (OSHA) requirements for accreditation of independent testing laboratories, Title 9, Part 1907.
4. On-site technical personnel shall be currently certified by the International Electrical Testing Association in electrical power distribution system testing.
5. Testing Agency shall use technicians who are regularly employed by the firm for testing services.
6. Contractor shall submit proof of above Testing Agency qualifications with bid documentation upon request.

F. All base material shall be ASTM and/or ANSI standards.

G. All electrical apparatus furnished under this Section shall conform to NEMA standards and the CEC and bear the UL label where such label is applicable.

H. Certify that each welder performing Work has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification.

1.03 DEFINITION OF TERMS

A. The following list of terms as used in the Division 26 documents shall be defined as follows:

1. "Provide": Shall mean furnish, install, and connect unless otherwise indicated.
2. "Furnish": Shall mean purchase and deliver to Project site.
3. "Install": Shall mean to physically install the items in-place.
4. "Connect": Shall mean make final electrical connections for a complete operating piece of equipment.
5. "As directed": Shall be as directed by the Owner or their authorized Representative.
6. "Utility Companies": Shall mean the company providing electrical, telephone or cable television services to the Project.

1.04 SUBMITTALS

A. Format: Furnish submittal data in electronic format for each Specification Section with a table of contents listing materials by Section and paragraph number.

B. Submittals shall consist of detailed Shop Drawings, Specifications, block wiring diagrams, "catalog cuts" and data sheets containing physical and dimensional information, performance data, electrical characteristics, materials used in fabrication and material finish. Clearly indicate by arrows or brackets precisely what is being submitted on and those optional accessories which are included and those which are excluded. Furnish quantities of each submittal as noted in Division 01.

C. Each submittal shall be labeled with the Specification Section Number and shall be accompanied by a cover letter or shall bear a stamp stating that the submittal has been thoroughly reviewed by the Contractor and is in full compliance with the requirements of the Contract Documents or provide a Specification Section line-by-line compliance response statement with detailed exception/ deviation response statements for all applicable provisions for the applicable Specification Section. Any Specification Section lines without a detailed exception/ deviation response statement shall be treated as the Contractor or Vendor is submitting in full compliance with the applicable Specification Section requirements. Cover letters shall list in full the items and data submitted. Failure to comply with this requirement shall constitute grounds for rejection of data.

D. The Contractor shall submit detailed Drawings of all electrical equipment rooms and closets if the proposed installation layout differs from the construction documents. Physical size of electrical equipment indicated on the Drawings shall match those of the electrical equipment that is being submitted for review, i.e.: switchboards, panelboards, transformers, control panels, etc. Minimum scale: 1/4" = 1'- 0". Revised electrical equipment layouts must be approved prior to release of order for equipment and prior to installation.

E. As part of the equipment and fixture submittals, the Contractor shall provide anchorage calculations for floor and wall mounted electrical equipment and fixtures, distribution conduits and raceways, in conformance with the 2025 California Building Code (CBC) and ASCE 7-16. Use the Occupancy Category, Ground Accelerations, Site Class, Seismic Design Category, and Seismic Importance Factor as noted in the structural drawings. For components required for Life Safety or containing hazardous materials use Ip=1.5. Structural Calculations shall be prepared, stamped, and signed by a California Registered Structural Engineer. Specify proof loads for drilled-in anchors, if used.

F. The Manufacturer shall recommend the method of anchoring the equipment to the mounting surface and shall provide the Contractor with the assembly dimensions, weights, and approximate centers of gravity.

G. Review of submittals is for general conformance to design concept and general compliance with the Specification Sections. Submittal Review Comments do not imply waiver of Specifications Section requirements unless specifically noted.

H. All resubmittals shall include a cover letter that lists the action taken and revisions made to each Drawing and equipment data sheet in response to Submittal Review Comments. Resubmittal packages will not be reviewed unless accompanied by this cover letter. Failure to include this cover letter will constitute rejection of the resubmittal package.

I. Shop Drawings for the following systems must be prepared via a computer aided drafting (CAD) or building information modeling (Revit) system for submission by the Contractor. The Engineer can provide CAD or Revit files of the electrical Contract Documents to the Contractor.

1. Digital Lighting Controls, Section 260942.
2. Photovoltaic Power System, Section 263100.

J. Independent Testing Agency report:

1. Testing Agency shall provide 3 copies of the complete testing report.
2. Test report shall include the following:
   a. Summary of Project.
   b. Description of equipment.
   c. Equipment used to conduct the test.
      1) Type.
      2) Manufacturer.
      3) Model number.
      4) Serial number.
      5) Date of last calibration.
      6) Documentation of calibration leading to NIST standards.
   d. Description of test.
   e. Test results, as compared to Manufacturers or industry accepted standards and tolerances.
   f. Conclusion and recommendation.
   g. Signature of responsible test organization authority.
3. Furnish completed test report to Engineer no later than 30-days after completion of testing, unless otherwise directed.

K. Substitutions:

1. All requests for substitutions shall conform to the general requirements and procedure outlined in Division 01.
2. Where items are noted as "or equal," a product of equal design, construction and performance will be considered. Contractor must submit to the Engineer all pertinent test data, catalog cuts

and product information required substantiating that the product is in fact equal to that specified. Only one substitution will be considered for each product specified.

3. Manufacturers' names and model numbers used in conjunction with materials, processes or equipment included in the Contract Documents are used to establish standards of quality, utility, and appearance. Materials, processes, or equipment, which in the opinion of the Engineer is equal in quality, utility, and appearance, will be approved as substitutions to that specified.

4. Whenever any material, process or equipment is specified in accordance with a Federal specification, an ASTM standard, an ANSI specification, UL rating or other association standard, the Contractor shall present an affidavit from the Manufacturer certifying that the product complies with the particular standard specification. When requested by the Engineer, support test data to substantiate compliance shall be submitted by the Contractor at no additional cost.

5. Substitutions shall be equal, in the opinion of the Architect/Engineer, to the specified product. The burden of proof of such shall rest with the Contractor. When the Architect/Engineer in writing accepts a substitution, it is with the understanding that the Contractor guaranteed the substituted article or material to be equal to the one specified and dimensioned to fit within the construction. Approved substitutions shall not relieve the Contractor of responsibilities for the proper execution of the Work or from any provisions of the Specifications.

6. The Contractor shall be responsible for all expenses in connection with the substitution materials, processes, and equipment, including the effect of the substitution on the Contractor, Subcontractor’s, or other Contractor's Work. No substitution of material, processes or equipment shall be permitted without written authorization of the Architect/Engineer. Any assumptions on the acceptability of a proposed substitution prior to acceptance by the Engineer are at the sole risk of the Contractor.

1.05 COORDINATION

A. Discrepancies:

1. In the event of discrepancies within the Contract Documents, the Engineer shall be so notified, within sufficient time, as delineated in Division 01, prior to the Bid Opening to allow the issuance of an Addendum.

2. If, in the event that time does not permit notification or clarification of discrepancies prior to the Bid Opening, the following shall apply: The Drawings govern in matters of quantity and the Specifications govern in matters of quality. In the event of conflict within the Drawings involving quantities or within the Specifications involving quantities or within the Specifications involving quality, the greater quantity and higher quality shall apply. Such discrepancies shall be noted and clarified in the Contractor's Bid. No additional allowances will be made because of errors, ambiguities or omissions that reasonably should have been discovered during the preparation of the Bid.

B. Project conditions:

1. Examination of Project site: The Contractor shall visit the Project site and thoroughly review the locale, working conditions, conflicting utilities, and the conditions in which the Electrical Work will take place. Verify all existing conditions in the field. No allowances will be made subsequently for any costs that may be incurred because of any error or omission due to failure

to examine the Project site and to notify the Engineer of any discrepancies between Contract Documents and actual Project site conditions.

2. Protection: Keep conduits, junction boxes, outlet boxes and other openings closed to prevent entry of foreign matter. Cover fixtures, equipment, devices, and apparatus and protect them against dirt, paint, water, chemical or mechanical damage, before and during construction period. Prior to final acceptance, restore to original condition any fixture, apparatus or equipment damaged including restoration of damaged factory applied painted finishes. Protect bright finished surfaces and similar items until in service. No rust or damage will be permitted.

3. Supervision: Contractor shall personally or through an authorized and competent representative constantly supervise the Work from beginning to completion and, within reason, keep the same foreman and workmen on the Project throughout the Project duration.

C. Preparation:

1. Drawings:

a. Layout: General layout indicated on the Drawings shall be followed except where other Work may conflict with the Drawings.

b. Accuracy: Drawings for the Work under this Section are essentially diagrammatic within the constraints of the symbology applied.

D. Utility company contacts:

1. Contact for electrical service:

2. Contact for telephone service:

3. Contact for television service:

1.06 RECORD DOCUMENTS

A. Provide Project Record Drawings as described herein:

1. Drawings shall fully represent installed conditions including actual locations of outlets, true panelboard connections following phase balancing routines, correct conduit, and wire sizing as well as routing, revised luminaire schedule listing Manufacturers and products installed and revised panel schedules. Contractor shall record all changes in the Work during the course of construction on blue or black line prints. These prints shall be made subject of monthly review by the Owner's Representative to ascertain that they are current. If not current, monthly payments may be withheld.

2. Record Drawings shall be the transfer of information on these prints to the construction documents via computer aided drafting (CAD) process. Electronic files of the electrical construction documents will be provided to the Contractor by the Engineer.

3. Record drawing submissions shall be provided to the Engineer to review upon the completion of the following phases of Work:

a. Final electrical installation.

4. Include in the record drawing submission the following shop drawing submission with all updated installation information:

a. Digital Lighting Controls, Section 260942.

b. Photovoltaic Power System, Section 263100.

5. A single set of half size prints of the Record Drawings shall be submitted for review. Upon receipt of the Engineer's review comments, corrections shall be made, and the Contractor shall provide the following:

a. One set of full size reproducibles.

b. Electronic files of Drawings in PDF and CAD.

B. Panel schedules:

1. Typewritten panel schedules shall be provided for panelboards indicating the loads served and the correct branch circuit number. Schedules shall be prepared on forms provided by the Manufacturer and inserted in the pocket of the inner door of each panelboard. See Section 262416: Panelboards for requirements.

2. A single set of the record panel schedules shall be submitted for review. Upon receipt of the Engineer's review comments, corrections shall be made, and the Contractor shall provide the following:

a. Fold and insert one copy of the appropriate schedule in the pocket of the inner door of each panelboard.

C. Field labels, markings, and warning signs: Provide in accordance and as required by:

1. General: CEC Article 110.21.

2. High-Leg System: CEC Article 110.15.

3. Arc-Flash Warning: CEC Article 110.16.

4. Identification of Disconnecting Means: CEC Article 110.22 (A).

5. Engineered Series Combination Systems: CEC Article 110.22 (B).

6. Tested Series Combination Systems: CEC Article 110.22 (C).

7. Available Fault Current: CEC Article 110.24.

8. Depth of Working Space in Existing Buildings: CEC Article 110.26 (A)(1)(c).

9. Guarding of Live Parts: CEC Article 110.27 (C).

10. Locked Rooms or Enclosures: CEC Article 110.34 (C).

11. Manholes: CEC Article 110.75 (E).

1.07 OPERATION AND MAINTENANCE MANUALS

A. Prior to Project closeout furnish to the Owner, six (6) hard back 3-ring binders containing all bulletins, operation and maintenance instructions, part lists, service telephone numbers and other pertinent information as noted in each Section all equipment furnished under Division 26. Binders shall be indexed into Division Sections and labeled for easy reference. Bulletins containing more information than the equipment concerned shall be properly stripped and assembled.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 COMMON REQURIEMENTS FOR ELECTRICAL INSTALLATION

A. All work shall be installed in a neat, workmanlike manner in accordance with ANSI/NECA 1-2015.

B. Comply with the requirements of all listed codes and standards.

C. All materials and equipment provided under this contract shall be new (except where otherwise noted) and shall be listed, labeled or certified by a Nationally Recognized Testing Laboratory (NRTL) to meet Underwriters Laboratories, Inc. (UL), standards where test standards have been established. Materials and equipment which are not covered by UL standards will be accepted, providing that materials and equipment are listed, labeled, certified or otherwise determined to meet the safety requirements of a NRTL.

D. All equipment of the same type and capacity shall be by the same manufacturer.

E. Where any device or part of equipment is referred to in these specifications in the singular number (e.g., "the switch"), this reference shall be deemed to apply to as many such devices as are required to complete the installation as shown on the drawings.

F. During construction the contractor shall at all times maintain electrical utilities of the building without interruption. Should it be necessary to interrupt any electrical service or utility, the contractor shall secure permission in writing from the owner’s representative for such Interruption at least ten (10) business days in advance. Any interruption shall be made with minimum amount of inconvenience and any shut-down time shall have to be on a premium time basis and such time to be included in the contractor's bid. Arrange to provide and pay for temporary power source as required by project conditions.

G. Working clearance around equipment shall not be less than that specified in the CEC for all voltages specified.

H. The locations of switches, receptacles, lights, motors, etc. outlets shown are approximate. The contractor shall use good judgment in placing the preceding items to eliminate all interference with ducts, piping, etc. The contractor shall check all door swings so that light switches are not located behind doors. Relocate switches as required, with approval from the Design Professional. The owner’s representative may direct relocation of outlets before installation, up to five (5) feet from the position indicated on the Drawings, without additional cost.

I. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity. Normal maintenance shall not require the removal of protective guards from adjacent equipment. Install equipment as close as practical to the locations shown on the Drawings.

   1. Where the owner’s representative determines that the Contractor has installed equipment not conveniently accessible for operations and maintenance, the equipment shall be removed and reinstalled as directed at no additional cost to the owner.

   2. “Conveniently Accessible” is defined as being capable of being reached without climbing or crawling over or under obstacles such as motors, pumps, belt guards, transformers, racks, piping, ductwork, raceways or similar.

J. Owner furnished equipment: Equipment furnished by the District shall be received, stored, uncrated, protected, and installed by the Contractor with all appurtenances required to place the

equipment in operation, ready for use. The Contractor shall be responsible for the equipment as if he had purchased the equipment himself and shall hold the warranty

3.02 ROUGH-IN

A. Contractor shall verify lines, levels and dimensions indicated on the Drawings and shall be responsible for the accuracy of the setting out of Work and for its strict conformance with existing conditions at the Project site.

B. Verify final locations for rough ins with field measurements and with the requirements for the actual equipment to be connected.

C. Refer to equipment specification in Divisions 22 through 33 for rough-in requirements.

3.03 ELECTRICAL INSTALLATION

A. Preparation, sequencing, handling, and installation shall be in accordance with Manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Comply with the following requirements:

1. Shop Drawings prepared by Manufacturer.

2. Verify all dimensions by field measurements.

3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.

4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

5. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the Work. Give attention to large equipment requiring positioning prior to closing in the building.

6. Where mounting height is not detailed or dimensioned, contact the Architect for direction prior to proceeding with rough-in.

7. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies and controlling agencies. Provide required connection for each service.

8. Install systems, materials, and equipment to conform with approved submittal data, including coordination Drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are indicated only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.

9. Install systems, materials, and equipment level and plumb, parallel, and perpendicular to other building systems and components, where installed exposed in finished spaces.

10. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

11. Coordinate electrical systems, equipment, and materials installations with other building components.

12. Provide access panel or doors where devices or equipment are concealed behind finished surfaces. Furnish and install access doors per the requirements of Division 08.
13. Install systems, materials and equipment giving right-of-way priority to other systems that are required to maintain a specified slope.
14. Conform to the National Electrical Contractors Association "Standard of Installation" for general installation practice.

3.04 CUTTING, PATCHING, PAINTING AND SEALING

A. Structural members shall in no case be drilled, bored, or notched in such a manner that will impair their structural value. Cutting of holes, if required, shall be done with core drill and only with the approval of the Architect and Structural Engineer.

B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

C. Cut, remove, and legally dispose of selected electrical equipment, components and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new work.

D. Protect the structure, furnishings, finishes and adjacent materials not indicated or scheduled to be removed.

E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

F. Patch existing surfaces and building components using experienced installers and new materials matching existing materials and the original installation. For installers' qualifications refer to the materials and methods required for the surface and building components being patched.

G. Application of joint sealers:

1. General: Comply with joint sealer Manufacturers' printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.
2. Installation of fire-stopping sealant: Install sealant, including forming, packing and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops and fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.05 FIELD QUALITY CONTROL

A. General testing requirements:

1. The purpose of testing is to ensure that all tested electrical equipment, both Contractor and Owner supplied, is operational and within industry and Manufacturer’s tolerances and is installed in accordance with design Specifications.
2. Tests and inspections shall determine suitability for energization.
3. Perform tests in presence of the Owner's Representative and furnish test equipment, facilities and technical personnel required to perform tests.
4. Tests shall be conducted during the construction period and at completion to determine conformity with applicable codes and with these Specifications.

B. Tests: In addition to specific system test described elsewhere, tests shall include:

1. Equipment operations: Test motors for correct operation and rotation.
2. Lighting control circuits: Test lighting circuits for correct operation through their control devices.
3. Alarm and interlock systems: Produce malfunction symptoms in operating systems to test alarm and interlock systems. In addition, all specific tests described in the fire alarm system shall be performed.
4. Circuit numbering verification: Select on a random basis, various circuit breakers within the panelboards and cycle them on and off to verify compliance of the typed panel directories with actual field wiring.
5. Voltage check:
   a. At completion of job, check voltage at several points of utilization on the system that has been installed under this Contract. During test, energize all installed loads.
   b. Adjust taps on transformers to give proper voltage, which is 118 to 122volts for 120volt nominal systems and proportionately equivalent for higher voltage systems. If proper voltage cannot be obtained, inform the Owner and the serving Utility Company.

C. Contractor shall provide test power required when testing equipment before service energization and coordinate availability of test power with General Contractor after service energization. The Contractor shall provide any specialized test power as needed or specified herein.

D. Testing safety and precautions:

1. Safety practices shall include the following requirements:
   a. Applicable State and Local safety operating procedures.
   b. OSHA.
   c. NSC.
   d. NFPA 70E.
2. All tests shall be performed with apparatus de-energized and grounded except where otherwise specifically required ungrounded by test procedure.

E. Calibration of test equipment:

1. Testing Agency shall have calibration program that assures test instruments are maintained within rated accuracy.
2. Instruments shall be calibrated in accordance with the following frequency schedule:
   a. Field instruments: Analog, 6-months maximum; Digital, 12-months maximum.
   b. Laboratory instruments: 12-months.
   c. Leased specialty equipment: 12-months where accuracy is guaranteed by lessor.
3. Dated calibration labels shall be visible on test equipment.
4. Records, which show date and results of instruments calibrated or tested, must be kept up to date.

5. Up-to-date instrument calibration instructions and procedures shall be maintained for test instrument.
6. Calibration standards shall be of higher accuracy than instrument tested.
7. Equipment used for field testing shall be more accurate than instrument being tested.

F. Coordinate with General Contractor regarding testing schedule and availability of equipment ready for testing.

G. Notify Owner and Engineer one week in advance of any testing.

H. Any products which fail during the tests or are ruled unsatisfactory by the Owner's Representative shall be replaced, repaired, or corrected as prescribed by the Owner's Representative at the expense of the Contractor. Tests shall be performed after repairs, replacements or corrections until satisfactory performance is demonstrated.

I. Testing Agency shall maintain written record of tests and shall assemble and certify final test report.

J. Include all test results in the maintenance manuals.

3.06 CLEANING

A. Prior to energizing of electrical equipment, the Contractor shall thoroughly clean the interior of enclosures from construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

B. Upon completion of Project, prior to final acceptance, the Contractor shall thoroughly clean both the interior and exterior of all electrical equipment per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt, and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

3.07 PROJECT CLOSEOUT

A. Training:

1. At the time of completion, a period of not less than 4-hours shall be allotted by the Contractor for instruction of building operating and maintenance personnel in the use of all systems. This 4-hour training is in addition to any instruction time called out in the Specifications for specific systems. All personnel shall be instructed at one time, the Contractor making all necessary arrangements with Manufacturer’s Representative. The equipment Manufacturer shall be requested to provide product literature and application guides for the users' reference. Costs, if any, for the above services shall be paid by the Contractor.
2. All training sessions shall be video recorded. Confirm file type, i.e. MOV, AVI, MP4, etc. with the district. Each specification section that requires training shall include one file, and all Division 26 specifications shall be stored on a flash drive (USB3.0, 1TB min.) 3 flash drives shall be provided to the district representative with closeout documentation.

B. Special tools: Provide one of each tool type required for proper operation and maintenance of the equipment provided under this Section. All tools shall be delivered to the Owner at the Project completion.

C. Keying: Provide two keys for each lock furnished under this Section and turn over to Owner.

END OF SECTION

SECTION 260060

POWER SYSTEM STUDY

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Services necessary to complete the system analysis studies required for the item specified under this Division, including but not limited to:

1. Short circuit study.
2. Protective device evaluation study.
3. Protective device coordination study.
4. Arc flash and shock risk assessment.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with equipment specified elsewhere to perform a complete analysis study.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. American National Standards Institute, Inc. (ANSI):

   ANSI Z535.4; Product Safety Signs and Labels

2. Institute of Electrical and Electronic Engineers (IEEE):

   IEEE 1584; Guide for Performing Arc-Flash Hazard Calculations

3. National Fire Protection Association (NFPA):

   NFPA 70E; Standard for Electrical Safety in the Workplace

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. The results of the Power System Study shall be summarized in a final report. Three (3) bound copies of the final report shall be submitted.
2. The report shall include the following Sections:
   a. Description, purpose, basis and scope of the study and a single line diagram of that portion of the power system, which is included within the scope of the study.
   b. Tabulations of circuit breaker, fuse and other protective device ratings versus calculated short circuit duties and commentary regarding it.
   c. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip settings, fuse selection and commentary regarding it.

d. Fault current calculations including a definition of terms and guide for interpretation of computer printout.

e. Recommended size for power fuses and recommended settings for ground fault relays and for all adjustable trip relays.

f. Confirmation in writing of compliance with Arc Energy Reduction per CEC Articles 240.67 and 240.87.

g. Tabulations of arc flash and shock risk assessment results and commentary regarding results.

h. Sample arc flash and shock hazard warning label.

3. Contractor shall also provide an electronic copy of the report as part of the Record Document process. Electronic copy of the report shall be in PDF format and its native file format (e.g. XXX.PRJ).

B. The study shall be submitted prior to final review of the distribution equipment Shop Drawings, prior to release of equipment for manufacture. If formal completion of the study may cause delay in equipment manufacture, approval from the Architect may be obtained for a preliminary submittal of sufficient data to ensure that the selection of device ratings and characteristics will be satisfactory. Then the formal study will be provided to verify the preliminary findings.

1.04 QUALITY ASSURANCE

A. The system analysis studies shall be performed by the Switchboard/Switchgear Manufacturer or by an approved Independent Testing Company. The analysis shall be stamped by a professional engineer licensed in the State of California.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 GENERAL

A. The studies shall include all portions of the electrical distribution system from the main normal power services down to and including the 208volt AC distribution system. Normal system connections and those that result in maximum fault conditions shall be adequately covered in the study.

3.02 SHORT CIRCUIT STUDY AND PROTECTIVE DEVICE EVALUATION STUDY

A. The short circuit study shall be performed with the aid of a computer program and shall be in accordance with the latest applicable IEEE and ANSI standards.

B. The study input data shall include the maximum available short circuit contribution, resistance and reactance components of the branch impedance, the X/R ratios, base quantities selected and other source impedance.

C. Short circuit close and latch duty values and interrupting duty values shall be calculated on the basis of maximum available current at each substation bus, switchgear bus, medium voltage controller, switchboard, low voltage motor control center, distribution panelboard, pertinent branch circuit panel and other significant locations through the system. The short circuit tabulations shall include asymmetrical fault currents, symmetrical fault currents and X/R ratios. For each fault location, the total duty on the bus, as well as the individual contribution from each connected branch, shall be listed with its respective X/R ratio.

D. A protective device evaluation study shall be performed to determine the adequacy of circuit breakers, switches, transfer switches and fuses by tabulating and comparing the short circuit ratings of these devices with the calculated fault currents. Appropriate multiplying factors based on system X/R ratios and protective device rating standards shall be applied. Any problem areas or inadequacies in the equipment due to short circuit currents shall be promptly brought to the Architect's attention.

3.03 PROTECTIVE DEVICE COORDINATION STUDY

A. A protective device coordination study shall be performed to provide the necessary calculations and logic decisions required to select or to check the selection of power fuse ratings, protective relay characteristics and settings, ratios and characteristics of associated current transformers, ground fault relays and low voltage breaker trip characteristics and settings. The studies shall be in accordance with the latest applicable IEEE and ANSI standards.

B. The coordination study shall include all medium and low-voltage classes of equipment from the building or plant service protective devices down to and including low voltage motor control centers and panelboards. The phase and ground overcurrent protection shall be included as well as settings of all other adjustable protective devices

C. The time-current characteristics of the specified protective devices shall be drawn on log-log paper. The plots shall include complete titles, representative one-line diagram and legends, significant motor starting characteristics, complete parameters of transformers, complete operating bands of low voltage circuit breaker trip curves and fuses, phase cable damage curves, ground cable damage curves, medium-voltage cable shield damage curves, ground resistor damage curves, etc. as appropriate for the project. The coordination plots shall indicate the types of protective devices selected, proposed relay taps, time dial and instantaneous trip settings, transformer magnetizing inrush and ANSI transformer withstand parameters, cable thermal overcurrent withstand limits and significant symmetrical and asymmetrical fault currents. All restrictions of the National Electrical Code shall be adhered to and proper coordination intervals and separation of characteristic curves shall be maintained. The coordination plots for phase and ground protective devices shall be provided on a system basis. A sufficient number of separate curves shall be used to clearly indicate the coordination achieved.

D. The selection and settings of the protective devices shall be provided separately in a tabulated form listing circuit identification, IEEE device number, current transformer ratios and connection, Manufacturer and type, range of adjustment and recommended settings. A tabulation of the recommended power fuse selection shall be provided for the medium voltage fuses where applied in the system. Any discrepancies, problem areas or inadequacies shall be promptly brought to the Architect's attention.

3.04 ARC FLASH AND SHOCK RISK ASSESSMENT

A. An arc flash and shock risk assessment shall be performed in accordance with NFPA 70E (utilizing IEEE 1584 calculation method for incident energy analysis method) at each switchboard, distribution board, panelboard, etc. in accordance with the referenced standards. NFPA 70E hazard/ risk tables for arc flash PPE category method are not acceptable for compliance with this section.

B. The arc flash and shock risk assessment shall include all voltage classes of equipment from the service entrance down to and including the panelboards, etc. in addition to all possible scenario configurations from alternate power sources (e.g. generators, etc.).

C. The company performing the arc flash and shock risk assessment shall provide arc flash and shock hazard warning labels for all equipment evaluated in accordance with NFPA 70E and ANSI Z535.4. Labeling shall be as follows:

1. Label type:

a. White vinyl or polyester with the following warning symbol color and black text:

1) Incident energy below 40 cal/cm² = Orange.

2) Incident energy for 40 cal/cm² and above = Red with DANGER symbol in lieu of WARNING.

b. Industrial grade self-adhesive backing.

c. Suitable for indoor or outdoor environments for a minimum of 3-years without fading or degrading.

2. Label information (minimum):

a. Nominal system voltage.

b. Arc flash boundary (inches).

c. Available incident energy and the corresponding working distance (inches).

d. Limited approach boundary (inches).

e. Restricted approach boundary (inches).

f. Equipment identification.

g. Date.

3. Labels shall be affixed to all equipment covered under the risk assessment by the company performing the arc flash and shock risk assessment.

4. Prior to printing and affixing labels, coordinate with the Owner and Architect, which scenario will be used for the labels.

3.05 PROTECTIVE DEVICE TESTING, CALIBRATION AND ADJUSTMENT

A. The equipment Manufacturer shall provide the services of a qualified field Engineer and necessary tools and equipment to test and calibrate the protective relays, ground fault relays and circuit breaker trip devices as recommended in the Power System Study.

END OF SECTION

SECTION 26 00 90

ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor and equipment necessary to complete the demolition required for the item specified under this Division, including but not limited to:

1. Electrical demolition

1.02 SYSTEM DESCRIPTION

A. Disconnection, removal and relocation of all wiring, luminaires, outlets, conduit, and all other types of electrical equipment as described on Drawings.

B. Purpose is to remove, relocate and extend existing installations to accommodate new construction.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment necessary for patching and extending Work, as specified in other Sections.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly review conditions in the area of demolition prior to commencing Work to ensure complete understanding of existing installation in relationship to demolition Work.

3.02 GENERAL REQUIREMENTS

A. Remove all wiring, luminaires, outlets, conduit, and all other types of electrical equipment indicated to be removed. Devices that are to be removed may require reworking conduit and wiring in order to maintain service to other devices. If removed devices are on walls or ceilings that are to remain, blank coverplates are to be installed on outlet boxes.

B. Where remodeling interferes with circuits in areas that are otherwise undisturbed, circuits shall be reworked as required.

C. Existing devices and circuiting that are indicated are indicated only for informational purposes. Contractor shall visit the Project site and shall verify conditions as they exist and shall remove, relocate, and/or rework any electrical equipment or circuits affected (whether indicated or not) due to removal of existing walls, ceilings, etc. Coordinate all Work with that of other trades.

D. All equipment, luminaires, devices, etc., which are removed shall be delivered to the Owner for disposition. All items which are removed and not wanted by the Owner and which are not reused shall become the property of the Contractor and shall be legally removed from the Project site.

E. Cutting and patching necessary for the removal of Electrical Work shall be included.

F. Remove and replace luminaires, rework, relocate or replace conduit and wiring and do other Work required by the installation of new ductwork, piping, etc., above the ceiling. Coordinate with other trades and verify the extent of the Work.

3.03 LUMINAIRES

A. Disconnect and remove abandoned luminaires. Remove conduits, wiring, boxes, brackets, stems, hangers, and other accessories.

3.04 OUTLETS

A. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

3.05 CONDUIT

A. Remove abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors and patch surfaces.

3.06 WIRING

A. Removed abandoned wiring to source of supply.

3.07 EXISTING SYSTEMS

A. Electrical distribution system: Disable system only to make switchovers and connections. Obtain permission from Owner's designated representative at least 24-hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to Work area.

3.08 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that shall remain.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

C. Luminaries: Remove lenses and lamps and clean all exposed surfaces. Also clean the lenses or replace if discolored. Provide all new lamping when re-assembling.

END OF SECTION

SECTION 26 05 19

BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Building wire.
2. Cable.
3. Wiring connections and terminations.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Underwriters Laboratories, Inc. (UL):

UL 4;	Armored Cable.
UL 44;	Thermoset-Insulated Wires and Cables.
UL 62;	Flexible Cord and Fixture Wire.
UL 83;	Thermoplastic-Insulated Wires and Cables.
UL 183;	Manufactured Wiring Systems.
UL 310;	Electrical Quick-Connect Terminals.
UL 486A & B;	Wire Connectors.
UL 486C;	Splicing Wire Connectors.
UL 486D;	Insulated Wire Connector Systems for Underground Use or in Damp or Wet Locations.
UL 493;	Thermoplastic-Insulated Underground Feeder and Branch Circuit Cables.
UL 510;	Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
UL 854;	Service-Entrance Cables.
UL 1569;	Metal-Clad Cables.
UL 1581;	Reference Standard for Electrical Wires, Cables and Flexible Cords.
UL 2196;	Standard for Tests of Fire Resistive Cables.

2. National Electrical Manufacturer Association (NEMA):

NEMA WC-70;	Power Cables Rated 2,000 V or Less for the Distribution of Electrical Energy.

3. Institute of Electrical and Electronic Engineers (IEEE):

IEEE 82;	Test Procedure for Impulse Voltage Tests on Insulated Conductors.
IEEE 576;	Recommended Practice for Installation, Termination, and Testing of Insulated Power Cable as Used in Industrial and Commercial Applications.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instructions.
4. Final test results.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

C. Independent Testing Agency qualifications: Refer to Section 260010: Basic Electrical Requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Building wire:
   a. Cerrowire
   b. General Cable
   c. Southwire Company
   d. Stabiloy (aluminum only)
   e. United Wire and Cable
2. Flexible cords and cables:

a. Carol Cable Company

b. Cerrowire

c. PWC Corp

3. Wiring connectors and terminations:

a. 3M Company.

b. Ideal.

c. Blackburn-Holub.

d. Burndy.

e. Thomas & Betts Corp.

f. Beau Barrier.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 BUILDING WIRE

A. Conductor material:

1. Provide annealed copper for all wire, conductor, and cable, unless otherwise indicated.

2. All building wire shall be stranded, unless otherwise indicated.

B. Insulation material:

1. All insulated wire, conductor and cable shall be 600volt rated, unless otherwise noted on the Drawings.

2. Thermoplastic-insulated building wire.

3. Rubber-insulated building wire.

4. Copper feeders and branch circuits larger than #6 AWG: Type THW, XHHW or dual rated THHN/THWN.

5. Copper feeders and branch circuits #6 AWG and smaller: Type TW, THW, XHHW or dual rated THHN/THWN.

6. Feeders and branch circuits for direct-current (DC) in wet locations: Type XHHW-2.

7. Conductors for variable frequency drives (VFD): Type XHHW-2.

8. Service Entrance: Type RHW or THWN.

9. Control Circuits: Type THW or dual rated THHN/THWN.

10. Identify system conductors as to voltage and phase connections by means of color-impregnated insulation.

2.03 FLEXIBLE CORDS AND CABLES (TYPE'S')

A. Provide flexible cords and cables of size, type and arrangement as indicated on the Drawings.

B. Type 'S' flexible cords and cables shall be manufactured in accordance with CEC Article 400 and composed of two or more conductors and a full size green insulated ground wire with an outer jacket of rubber or neoprene as noted.

C. Flexible cords and cables shall be fitted with wire mesh strain relief grips either as an integral component of the connector or as an independently supported unit.

D. Suspended flexible cords and cables shall incorporate safety spring(s) unless otherwise noted.

2.04 WIRING CONNECTIONS AND TERMINATIONS

A. Bolted pressure connectors: Provide wide range-taking connectors with cast bronze compression bolts, designed for parallel taps, tees, crosses or end-to-end connections.

B. Electrical spring wire connectors:

1. Provide multi-part construction incorporating a non-restricted, zinc coated square cross-section steel spring enclosed in a steel sheet with an outer jacket of plastic and insulating skirt.

2. Self-striping pigtail and tap U-contact connectors shall not be used.

C. Compression type terminating lugs:

1. Provide tin-plated copper high-compression type lugs for installation with hand or hydraulically operated circumference-crimping tools and dies as stipulated by the lug Manufacturer or as indicated on Drawings. Notch or single point type crimping is NOT acceptable.

2. Two-hole, long barrel lugs shall be provided for size #4/0 and larger wire where terminated to bus bars. Use minimum of three crimps per lug, on sizes where possible.

D. Splicing and insulating tape: Provide black, ultraviolet proof, self-extinguishing, 7-mil thick vinyl general purpose electrical tape with a dielectric strength of 10,000volts suitable for temperatures from minus 18-degrees C to 105-degrees C.

E. Insulating putty:

1. Provide pads or rolls of non-corrosive, self-fusing, one-eighth inch thick rubber putty with PVC backing sheet. Scotch vinyl mastic pads and roll or equal.

2. Use putty suitable for temperatures from minus 17.8-degrees C to 37.8-degrees C with a dielectric strength of 570volts/mil minimum.

F. Insulating resin:

1. Two-part liquid epoxy electrical insulating and encapsulating resin in a sealed mixing pouch, suitable for low-voltage power and control cable splices in wet locations, underground boxes, and vaults; rated for direct burial and continuous submersion; compatible with typical thermoplastic and thermoset cable insulations; provided as part of a molded splice kit or in manufacturer’s standard mixing bag. Use 3M Scotchcast electrical insulating resin and resin cable-joint kits listed for low-voltage wet-location splicing (e.g., 3M Scotchcast Resin Cable Joint Kits using Electrical Insulating Resin 40, or comparable current 3M product), or equal.

2. Use resin with a set up time of approximately 30-minutes at 21.1-degrees C and with thermal and dielectric properties equal to the insulating properties of the cables immersed in the resin.

G. Terminal strips:

1. Provide box type terminal strips in the required quantity plus 25% spare. Install in continuous rows in terminal cabinets.
2. Use the box type terminal strips with barrier open backs and with ampere ratings as required.
3. Identify all terminals with numbering sequence being used for a system.

H. Crimp type connectors:

1. Provide insulated fork or ring crimp terminals with tinned electrolytic copper-brazed barrel with funnel wire entry and insulation support
2. Fasten crimp type connectors or terminals using a crimping tool recommended by the connector Manufacturer.
3. Provide insulated overlap splices with tinned seamless electrolytic copper barrel with funnel wire entry and insulation support.
4. Provide insulated butt splices with tinned seamless electrolytic copper barrel with center stop, funnel wire entry and insulation support.

I. Cable ties: Provide harnessing and point-to-point wire bundling with nylon cable ties. All cable ties shall be installed using tool supplied by Manufacturer of ties.

J. Wire lubricating compound:

1. UL listed for the wire insulation and conduit type and shall not harden or become adhesive.
2. Shall not be used on wire for isolated type electrical power systems.

K. Bolt termination hardware:

1. Bolts shall be plated, medium carbon steel heat-treated, quenched and tempered equal to ASTM A-325 or SAE grade 5; or silicon bronze alloy ASTM B-9954 Type B.
2. Nuts shall be heavy semi-finished hexagon, conforming to ANSI B18.2.2, threads to be unified coarse series (UNC), class 2B steel or silicon bronze alloy.
3. Flat washers shall be steel or silicon bronze, Type A plain standard wide series, confirming to ANSI B27.2. SAE or narrow series shall not be used.
4. Belleville conical spring washers shall be hardened steel, cadmium plated or silicon bronze.
5. Each bolt connecting lug(s) to a terminal or bus shall not carry current exceeding the following values:
   a. 1/4" bolt: 125amps
   b. 5/16" bolt: 175amps

c. 3/8" bolt: 225amps

d. 1/2" bolt: 300amps

e. 5/8" bolt: 375amps

f. 3/4" bolt: 450amps

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of wire and cable installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 APPLICATION

A. All wire, conductor and cable with their respective connectors, fittings and supports shall be UL listed for the installed application and ambient condition.

B. Feeders and branch circuits in wet locations shall be rated 75-degree C.

C. Feeders and branch circuits in dry locations shall be rated 90-degree C.

D. Feeders and branch circuits for direct-current (DC) systems, such as PV installations, in wet locations shall be type XHHW-2 copper conductors.

E. For wiring of the following, refer to the indicated Code Articles:

1. Fire pump systems shall comply with CEC Article 695.

2. Emergency systems shall comply with CEC Article 700.

3. Fire alarm systems shall comply with CEC Article 760.

4. Where the any above are required to be fire-resistive, refer to CEC Article 728.

F. Minimum conductor size:

1. Provide minimum AWG #12 for all power and lighting branch circuits.

2. Provide minimum AWG #14 for all line voltage signal and control wiring unless otherwise indicated.

G. Color coding:

1. For 120/208volt, 3-phase, 4-wire systems:

a. Phase A - Black

b. Phase B - Red

c. Phase C - Blue

d. Neutral - White

e. Ground - Green

2. For 277/480volt, 3-phase, 4-wire systems:

a. Phase A - Brown

b. Phase B - Orange

c. Phase C - Yellow

d. Neutral - Gray

e. Ground - Green

3. Switch leg individually installed shall be the same color as the branch circuit to which they are connected, unless otherwise noted.

4. Travelers for 3-way and 4-way switches shall be a distinct color and pulled with the circuit switch leg or neutral.

3.03 WIRING METHODS

A. Install wires and cables in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Install all single conductors in raceway system, unless otherwise noted.

C. Parallel circuit conductors and terminations shall be equal in length and identical in all ways.

D. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than #10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

E. 20amp power and lighting branch circuit containing no more than four (4) current carrying conductors (phases and neutrals). Use #10 AWG conductor for 120/208volt circuits located outside a 75-foot radius of panel source and for 277/480volt branch circuits located outside a 200-foot radius of panel source, unless otherwise noted.

F. 20amp power and lighting branch circuits containing no more than eight (8) current carrying conductors (phases and neutrals). Use #10 AWG conductors for 120/208volt circuits located outside a 65-foot radius of panel source and for 277/480volt circuits located outside a 150-foot radius of panel source.

G. Provide #10 AWG pig tails on all 20amp and 30amp wiring devices served by #8 AWG conductors and larger.

H. Splice cables and wires only in outlet boxes, junction boxes, pull boxes, manholes or handholes. Group and bundle with tie wrap each neutral with its associated phase conductor where more than one neutral is present in a conduit.

I. Install cable supports for all vertical feeders in accordance with the CEC Article 300. Provide split wedge type fittings, which firmly clamp each individual cable and tighten due to cable weight.

J. Neatly form, train, and tie the cables in individual circuits. For panelboards, cabinets, wireways, switches, and equipment assemblies.

K. Seal cable or wire, entering a building from underground or exiting walk-in cold box or freezer, between the wire or cable and conduit, where it exits the conduit, with a non-hardening approved compound, i.e. duct seal or equal.

L. Provide UL-listed factory-fabricated, solderless metal connectors of size, ampacity rating, material, type, and class for applications and for services indicated. Use connectors with temperature ratings equal to or greater than the wires that are being terminated.

M. Stranded wire shall be terminated using fitting, lugs or devices listed for the application. However, in no case shall stranded wire be terminated solely by wrapping it around a screw or bolt.

N. Flexible cords and cables supplied, as part of a pre-manufacturer fixture or unit assembly shall be installed according to Manufacturers published installation instructions.

3.04 WIRING INSTALLATION IN RACEWAYS

A. Install wire in raceway in accordance with IEEE 576, Manufacturer's written instructions, as indicated on the Drawings and as specified herein after interior of building has been physically protected from the weather and all mechanical Work likely to injure conductors has been completed. Pull all conductors into a raceway at the same time. Exercise care in pulling conductors so that insulation is not damaged. Use UL listed, non-petroleum base and insulating type pulling compound as needed.

B. Completely mandrel all underground or concrete encased conduits prior to installing conductors.

C. Completely and thoroughly swab raceway system before installing conductors.

D. Do not use block and tackle, power driven winch or other mechanical means for pulling conductors of size smaller than #1 AWG.

E. Wire pulling:

1. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables.

2. Use rope made of nonmetallic material for pulling feeders.

3. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors.

4. Pull in together multiple conductors or cables in a single conduit.

5. Pulling tensions and sidewall pressures shall not exceed 60% of the manufacturer's recommended maximum values. Pulling tension shall be continuously monitored during the pull by a calibrated dynamometer. If pulling tension is exceeded during the pull, immediately notify the engineer to determine if the cables will be considered damaged and require contractor replacement.

F. Install and test all cables in accordance with Manufacturer's instructions and warranty.

3.05 MC CABLE INSTALLATION

A. Use of MC Cable is restricted to installation above accessible ceiling space, for lighting installed in the t-bar ceiling, i.e. fixture whips.

B. Install MC cable in accordance with Manufacturer's instructions and in strict accordance with CEC Article 330. Secure and support MC cable with straps, independent hanger wire per CEC 300.11 (B), or cable ties listed for the purpose. Follow Manufacturer's explicit instructions when connecting the cable to fittings and boxes. Connectors shall be firmly

secured to the cable, but not over-tightened. Connector shall be firmly attached to the metal boxes.

C. Support cables every 6-feet and within 12-inches of boxes, per CEC Article 330, using separate spring metal clip or metal cable ties (not steel tie wire) for each cable. Cables shall not be bundled together.

D. Hanger wire used to support suspended ceilings may not be used to directly support MC cables.

E. Do not rest cables on ceiling tiles or allow contact with mechanical piping systems.

F. Bend the cable per CEC Article 330.

G. Provide separate sleeves and/or fire barriers where cable penetrated firewalls, unless cable is UL listed for the application.

3.06 WIRE SPLICES, JOINTS AND TERMINATION

A. Join and terminate wire, conductors, and cables in accordance with UL 486A, C, CEC and Manufacturer's instructions.

B. Thoroughly clean wires before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Splices and terminations shall be made mechanically and electrically secure.

E. Where it's determined that unsatisfactory splice or terminations have been installed, remove the devices and install approved devices at no addition cost.

F. Terminate wires in Terminal Cabinets, relay, and contactor panels, etc. using terminal strip connectors.

G. Insulate spare conductors with electrical tape and leave sufficient length to terminate anywhere in the panel or cabinet.

H. Install cable ties and maintain harnessing.

I. Encapsulate splices in exterior outlets, pull boxes and junction boxes using specified insulating resin kits. Make all splices watertight for exterior equipment and equipment in pump rooms.

J. Make up all splices and taps in accessible junction or outlet boxes with connectors as specified herein. Pigtails and taps shall be the same color as the feed conductor. Form conductor prior to cutting and provide at least 6-inches of tail and neatly packed in box after splice is made up.

K. Branch circuits (#10 AWG and smaller):

1. Connectors: Solderless, screw-on, reusable spring pressure cable type, 600volt, 105-degree C. with integral insulation, approved for copper conductors.

2. The integral insulator shall have a skirt to completely cover the stripped wires.

3. The number, size and combination of conductors as listed on the Manufacturers packaging shall be strictly complied with.

L. Feeder circuits: (#6 to 750 kCMIL)

1. Join or tap conductors from #6 AWG to 750 kCMIL using bolted pressure connectors or insulate mechanical compression (hi-press) taps with pre-molded, snap-on insulating boots or specified conformable insulating pad and over wrapped with two half-lapped layers of vinyl insulating tape starting and ending at the middle of the joint.
2. Terminate conductors from size #6 AWG to 750 kCMIL copper using bolted pressure or mechanical compression lugs in accordance with Manufacturer recommendation or as specified elsewhere.
3. Field installed compression connectors for cable sizes 250 kCMIL and larger shall have not less than two clamping elements or compression indents per wire.
4. Insulate splices and joints with materials approved for the particular use, location, voltage, and temperature. Insulate with not less than that of the conductor level that is being joined.

M. Termination hardware assemblies:

1. AL/CU lugs connected to aluminum plated or copper buss, shall be secured using a steel bolt, flat washer (two per bolt), Belleville washer and nut.
2. Copper lugs connected to copper bus, shall be secured using silicon bronze alloy bolt, flat washer (two per bolt), Belleville washer and nut.
3. The crown of Belleville washers shall be under the nut.
4. Bolt assemblies shall be torque to Manufacturer recommendation. Where manufacture recommendations are not obtainable, the following values shall be used:
   a. 1/4" - 20 bolt at 80-inch pounds torque.
   b. 5/16" - 18 bolt at 180-inch pounds torque.
   c. 3/8" - 16 bolt at 20-foot pounds torque.
   d. 1/2" - 13 bolt at 40-foot pounds torque.Fp
   e. 5/8" - 11 bolt at 55-foot pounds torque.
   f. 3/4" - 10 bolt at 158-foot pounds torque.

3.07 IDENTIFICATION

A. Refer to Section 260553: Electrical Identification for additional requirements.

B. Securely tag all branch circuits. Mark conductors with specified vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each conductor with the corresponding circuit number.

C. Color code conductors' size #8 and larger using specified phase color markers and identification tags, with exception of the grounded conductor which must have a continuous white or gray jacket if #6 or smaller.

D. Provide all terminal strips with each individual terminal identified using specified vinyl markers.

E. In manholes, pull boxes and handholes, provide tags of the embossed brass type and show the cable type and voltage rating. Attach the tags to the cables with slip-free plastic cable lacing units.

3.08 FIELD QUALITY CONTROL

A. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing required herein. Independent Testing Agency shall meet the requirements as outlined in Section 260010: Basic Electrical Requirements.

B. Prefunctional testing:

1. Visual and mechanical inspection:

a. Compare cable data with Contract Documents.

b. Inspect exposed sections of wires and cables for physical damage and proper connections.

c. Verify tightness of accessible bolted connections with calibrated torque wrench in accordance with Manufacturer's published data.

d. Inspect compression applied connectors for correct cable match and indention.

e. Verify visible cable bend meet or exceed ICEA and Manufacturer's minimum allowable bending radius.

f. If cables are terminated through window type current transformers, inspect to verify neutral and ground conductors are correctly placed for operation of protective devices.

g. Ensure wire and cable identification has been installed as specified herein.

2. Electrical testing:

a. Contractor shall perform feeder and branch circuit insulation test after installation and prior to connection to utilization devices such as fixtures, motors, or appliances. Testing shall be as follows:

1) 100% of all feeders 100amp rated and above.

2) 50% of all feeders smaller than 100amps.

3) 10% of all branch circuits at each individual panelboard.

b. Perform insulation-resistance test using megohm meter with applied potential of 1000volt DC for a continuous duration of 60-seconds. Test conductors' phase-to-phase and phase-to-ground. Conductors shall test free from short-circuit and ground faults.

c. Perform continuity test of all feeder and branch circuits to ensure correct cable connections. Test all neutrals for improper grounds.

d. Contractor shall furnish instruments, materials, and labor for these tests.

3. Test values: Investigate resistance values less than 50-megohms.

4. Furnish test results in typewritten report form for review and inclusion in the operation and maintenance manuals.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Power system grounding.
2. Site lighting grounding.
3. Electrical equipment and raceway grounding and bonding.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Division 05: Building Steel.
3. Division 22: Cold Water Piping.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Underwriters Laboratories, Inc. (UL):

UL 467;	Grounding and Bonding Equipment.

2. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

IEEE No. 142;	Recommended Practice for Grounding of industrial and Commercial Power Systems.
IEEE No. 81	Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.

1.03 SYSTEM DESCRIPTION

A. Ground the electrical service system neutral at service entrance equipment as described herein and indicated on Drawings.

B. Ground each separately derived system neutral as described herein and indicated on Drawings.

C. Except as otherwise indicated, the complete electrical installation including the neutral conductor, metallic conduits and raceways, cable trays, boxes, cabinets and equipment shall be completely and effectively grounded in accordance with all code requirements, whether or not such connections are specifically indicated or specified.

D. Resistance:

1. Resistance from the main switchboard ground bus through the ground electrode to earth shall not exceed 5-OHMS unless otherwise noted.
2. Resistance from the farthest panelboard, switchboard, etc. ground bus through the ground electrode to earth shall not exceed 20-OHMS

1.04 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:
1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.
B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
1. Ground Rods:
a. Weaver.
b. Erico "Cadweld" Products, Inc.
2. Ground Wells:
a. Christy Concrete Products, Inc.
b. Forni Corp.
3. Ground Bushings, Connectors, Jumpers and Bus:
a. O-Z/Gedney.
b. Thomas & Betts Corp.
B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 GROUND CONDUCTORS

A. Refer to Specification Section 260519: Building Wire and Cable for conductor specifications.
B. General purpose insulated:

1. UL approved and code sized copper conductor, with dual rated THHN/THWN insulation, color identified green.
2. Where continuous color-coded conductors are not commercially available, provide a minimum 4" long color band with green, non-aging, plastic tape in accordance with CEC.

C. Bare conductors in direct contact with earth or encased in concrete: #4/0 AWG copper minimum, U.O.N.

D. Bonding pigtails: Insulated copper conductor, identified green, sized per code, and provide with termination screw or lug. Provide solid conductors for #10 AWG or smaller and stranded conductors for #8 AWG or larger.

2.03 DRIVEN (GROUND) RODS

A. Copper clad steel, minimum 3/4-inch diameter by 8 feet long, unless otherwise noted.

2.04 GROUND WELL BOXES FOR GROUND RODS

A. Precast concrete box nominal 9" throat diameter x 14" deep with light duty concrete cover for non-traffic areas or steel plate for traffic areas. Cover shall be embossed or engraved with "GROUND ROD".

2.05 INSULATED GROUNDING BUSHINGS

A. Plated malleable iron or steel body with 150-degree Centigrade molded plastic insulating throat and lay-in grounding lug.

2.06 CONNECTIONS TO PIPE

A. For cable to pipe: UL and CEC approved bolted connection.

2.07 CONNECTIONS TO STRUCTURAL STEEL, GROUND RODS OR SPLICES

A. Where required by the Drawings, grounding conductors shall be spliced together, connected to ground rods or connected to structural steel using exothermic welds or high-pressure compression type connectors.

1. Exothermic welds shall be used for cable-to-cable and cable-to-ground rod and for cable to structural steel surfaces. Exothermic weld kits shall be as manufactured by Cadweld or equal. Each particular type of weld shall use a kit unique to that type of weld.
2. High-pressure compression type connectors shall be used for cable-to-cable and cable-to-ground rod connections.

2.08 EXTRA FLEXIBLE, FLAT BONDING JUMPERS

A. Where required by Code, indicated on the Drawing, and specified herein.

2.09 BUILDING GROUND BUS REQUIREMENTS

A. Main building power system ground bus:

1. Provide one 24" wide x 4" high x 1/4" thick copper bus bar as a minimum. Mount on wall in main electrical room utilizing insulating stand-offs at 18" above finished floor.

2. Furnish complete with cast copper alloy body lugs for connecting grounding system conductors. Attach lugs to bus with appropriate size cadmium bronze bolt, flat washer, and Belleville washer. Torque all lug connections.
3. All holes shall be drilled and tapped for single-hole lugs. Provide 6 spare lugs and lug spaces.

B. Building power system reference ground bus:

1. The reference ground bus is furnished as part of the main electrical switchboard for the building, along with neutral disconnect and bus, and is in addition to the main building power system ground bus outlined above. The building grounding electrode shall make a direct connection to the building referenced ground bus in the main switchboard.
2. Provide a #4/0 AWG copper ground conductor connection between the building reference ground bus in switchboard and the main building ground bus wall mounted in main electrical room.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of grounding system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Grounding electrodes:

1. Metal underground water pipe: Cold water metal piping system: Where the underground cold water service line is metal, indirect contact with the earth for 10-feet or more, the Contractor shall install a grounding electrode conductor from the main incoming cold water line ahead of the meter and extend to the main building reference ground bus in the main electrical room. The electrode shall be sized per CEC Article 250. Electrode connection should be accessible.
2. Concrete encased grounding electrode (UFER ground): Provide a #4/0 AWG minimum bare copper conductor encased along the bottom of concrete foundation or footings which are in direct contact with the earth and where there is no impervious water-proofing membrane between the footing and the soil. The electrode shall extend through a horizontal length of 30 feet minimum and shall be encased in not less than 2 or more than 5 inches of concrete separating it from surrounding soils. The electrode shall emerge from the concrete slab through a protective non-metallic sleeve and shall be extended to the main building reference ground bus.
3. Supplementary grounding electrode (ground ring, grid and driven rods): Provide, as indicated on the Drawings, driven ground rod(s) installed in listed ground well box(s) and filled with gravel after connection is made. Interconnect ground rod with structural steel and adjacent rods with minimum #2 AWG bare copper conductor. Ground rod shall not be less than 10 foot from any other electrode of another electrical system or from adjacent ground rod(s).

B. Grounding electrode conductor: Provide grounding electrode conductor as indicated on the Drawings or sized per CEC Article 250, whichever is greater.

C. Power system grounding:

1. Provide, unless otherwise indicated, a main building power system ground bus mounted on the wall in the main electrical room. Connect the following items using CEC sized copper grounding conductors to lugs on the main building ground bus:
    a. Grounding conductor from building reference ground bus in main service switchboard.
    b. Bonding conductor to metallic cold-water piping system.
    c. Bonding conductor to building structural steel.
    d. Separately derived system grounding conductors in same room.
2. At the building power system reference ground bus in the main service switchboard, connect the grounding electrode conductor from concrete encased UFER ground or other grounding electrode systems as indicated on the Drawing or herein.

D. Separately derived electrical system grounding:
1. Ground each separately derived system per requirements in CEC Article 250 as a minimum, unless greater requirements are required elsewhere in the Contract Documents.
2. Transformers: Provide copper terminal bar for grounding and bonding the transformer in accordance with CEC Articles 250.30 and 450.10. Bond the terminal bar to the enclosure and connect the following to the terminal bar:
    a. Primary feeder equipment ground conductor(s).
    b. Secondary feeder supply-side bonding jumper(s).
    c. Grounding electrode conductor.
    d. Main bonding jumper to neutral (when present).
    e. Supplemental grounding electrodes.

E. Equipment bonding/grounding:
1. Provide a CEC sized insulated copper ground conductor in all 120volt AC through 600volt AC feeder and branch circuit distribution conduits and cables.
2. Provide a separate grounding bus at panelboards, switchboards. Connect all metallic enclosed equipment so that with maximum fault current flowing, shall be maintained at not more than 35volts above ground.
3. Conduit terminating in concentric, eccentric, or oversized knockouts at panelboards, cabinets, gutters, etc. shall have grounding bushings and bonding jumpers installed interconnecting all such conduits.
4. Provide bonding jumpers across expansion and deflection couplings in conduit runs, pipe connections to water meters, dielectric couplings in metallic cold-water piping system.
5. Provide internal ground wire in flexible conduit connected at each end via grounding bushing.

F. Site lighting grounding: Bond all metallic light poles and bollards. Provide ground rods where indicated on the Drawings.

3.03 FIELD QUALITY CONTROL

A. Independent Testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing required herein.

B. Prefunctional testing:

1. Provide Testing Agency with Contract Documents for their review prior to the commencement of ground testing.

2. Visual and mechanical inspection:

   a. The Testing Agency shall inspect the grounding electrode and connections prior to concrete encasement, burial, or concealment.

   b. Check tightness and welds of all ground conductor terminations.

   c. Verify installation complies with the intent of the Contract Documents

3. Obtain and record ground resistance measurements both from electrical equipment ground bus to the ground electrode and from the ground electrode to earth. Furnish and install additional bonding and add grounding electrodes as required complying with resistance limits specified under this Section of the Specification.

4. A typewritten record of measured resistance values shall be submitted for review and included with the operation and maintenance manual furnished to the Owner at the time of Project closeout and before certificate of final payment is issued.

END OF SECTION

SECTION 260529

ELECTRICAL HANGERS AND SUPPORTS

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Conduit supports.
2. Equipment supports.
3. Fastening hardware.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Division 03: Cast-in-place concrete. Concrete equipment pads.
3. Division 05: Miscellaneous metals. Hangers for electrical equipment.
4. Division 09: Ceiling suspension systems. Slack support wires.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Underwriters Laboratories, Inc. (UL):

UL 2239; Hardware for the Supports of Conduit, Tubing and Cable.

1.03 SYSTEM DESCRIPTION

A. Provide devices specified in this Section and related Sections for support of electrical equipment furnished and installed under Division 26.

B. Provide support systems that are adequate for the weight of equipment, conduit and wiring to be supported.

1.04 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Concrete fasteners:

a. Hilti “Kwik-Bolt TZ2”.

b. Phillips "Red-Head".

c. Remington.

d. Ramset.

2. Concrete inserts and construction channel:

a. Unistrut Corp.

b. GS Metals "Globe Strut."

c. Thomas & Betts "Kindorf" Corp.

3. Conduit straps:

a. O-Z/Gedney.

b. Erico "Caddy" Fastening Products.

c. Thomas & Betts "Kindorf" Corp.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 CONCRETE FASTENERS

A. Provide expansion-shield type concrete anchors.

B. Provide powder driven concrete fasteners with washers. Obtain approval by Architect and Structural Engineer prior to use.

2.03 CONCRETE INSERTS

A. Provide pressed galvanized steel, concrete spot insert, with oval slot capable of accepting square or rectangular support nuts of ¼ inch to ½ inch diameter thread for rod support.

2.04 THREADED ROD

A. Provide steel threaded rod, sized for the load unless otherwise noted on the Drawings or in the Specifications.

2.05 CONSTRUCTION CHANNEL

A. Provide 1.5-inch by 1.5-inch, 12-gauge galvanized steel channel with 17/32-inch diameter bolt holes and 1-1/2 inch on center in the base of the channel.

2.06 CONDUIT STRAPS

A. One-hole and two-hole strap, steel, or malleable iron, with malleable iron clamp-back spacer for surface mounted wall and ceiling applications.

1. Use malleable strap with spacers for exterior and wet locations.

2. Use steel strap without spacers for interior locations.

B. Steel channel conduit strap for support from construction channel.

C. Steel conduit hanger for pendant support with threaded rod

D. Steel wire conduit support strap for support from independent #12-gauge hanger wires.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of supporting device installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 PREPARATION

A. Coordinate size, shape, and location of concrete pads with Division 03, Cast-in-place concrete.

B. Layout support devices to maintain headroom, neat mechanical appearance and to support the equipment loads.

C. Where indicated on the Contract Documents, install freestanding electrical equipment on concrete pads.

3.03 INSTALLATION

A. Furnish and install supporting devices as noted throughout Division 26.

B. Electrical device and conduit supports shall be independent of all other system supports that are not structural elements of the building, unless otherwise noted.

C. Fasten hanger rods, conduit clamps, outlet, and junction boxes to building structure using precast inserts, expansion anchors, preset inserts, or beam clamps.

D. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster or gypsum board partitions and walls.

E. Use expansion anchors or preset inserts in solid masonry walls.

F. Use self-drilling anchors, expansion anchor or preset inserts on concrete surfaces.

G. Use sheet metal screws in sheet metal studs and wood screws in wood construction.

H. Do not fasten supports to piping, ductwork, mechanical equipment, conduit, or acoustical ceiling suspension wires.

I. Do not drill structural steel members unless first approved in writing by the Architect or Structural Engineer.

J. Fabricate supports from structural steel or steel channel, rigidly welded, or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

K. Install surface-mounted cabinets and panelboards with minimum of four anchors. Provide additional support backing in stud walls prior to sheet rocking as required to adequately support cabinets and panels.

L. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.

M. Two-hole conduit strap shall be furnished and installed near and attached to HVAC equipment. Fasteners shall be nut secured. Bolt close tightening clamps and vertical style are prohibited at HVAC equipment.

3.04 ERECTION OF METAL SUPPORTS

A. Cut, fit and place miscellaneous metal fabrications accurately in location, alignment and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS "Structural Welding Code."

3.05 WOOD SUPPORTS

A. Cut, fit, and place wood grounds, nailers, blocking and anchorage accurately in location, alignment and elevation to support and anchor electrical materials and equipment.

3.06 ANCHORAGE

A. All floor mounted, free standing electrical equipment such as transformers, switchboards, distribution boards, etc. shall be securely fastened to the floor structure.

B. Anchorage of electrical equipment shall comply with the seismic requirements as outlined in Section 260010: Basic Electrical Requirements.

END OF SECTION

SECTION 260531

CONDUIT

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Rigid steel conduit and fittings.
2. PVC insulated rigid steel conduit and fittings.
3. Intermediate metal conduit and fittings.
4. Electrical metallic tubing and fittings.
5. Flexible metallic conduit and fittings.
6. Liquidtight flexible metallic conduit and fittings.
7. Miscellaneous conduit fittings and products.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Division 01: Cutting and patching.
3. Division 07: Sheet metal flashing and trim.
4. Division 09: Painting. Exposed conduit and other devices.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. American National Standards Institute, Inc. (ANSI):

ANSI C80.1;	Rigid Steel Conduit, Zinc-Coated.
ANSI C80.3;	Electrical Metallic Tubing, Zinc Coated.
ANSI C80.5;	Rigid Aluminum Conduit.
ANSI/ TIA-569-D	Telecommunications Pathways and Spaces.

2. Underwriters Laboratories, Inc. (UL):

UL 1;	Flexible Metal Conduit.
UL 6;	Rigid Metal Conduit.
UL 360;	Liquid-Tight Flexible Steel Conduit.

UL 514B; Conduit, Tubing and Cable Fittings.

UL 635; Insulating Bushings.

UL 797; Electrical Metallic Tubing - Steel.

UL 1242; Intermediate Metal Conduit - Steel.

3. National Electrical Manufacturer Association (NEMA):

NEMA RN1; PVC Externally coated Galvanized Rigid Steel Conduit.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instruction. Provide written instructions for raceway products requiring glues, special tools, or specific installation techniques.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted and approved.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Metal conduit:
   a. Allied Tube and Conduit Co.
   b. Triangle PWC, Inc.
   c. Western Tube and Conduit Corp.
   d. Spring City Electrical Manufacturing Co.
   e. Alflex Corp.
   f. American Flexible Metal Conduit Co.
   g. Anaconda.
2. Fittings:
   a. Appleton Electric Co.
   b. OZ/Gedney.

c. Thomas & Betts Corp.

d. Spring City Electrical Manufacturing Co.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 GALVANIZED RIGID STEEL CONDUIT (GRS)

A. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and UL 6.

B. Standard threaded couplings, locknuts, bushings, and elbows: Only materials of steel or malleable iron are acceptable. Locknuts shall be bonding type with sharp edges for digging into the metal wall of an enclosure; provide two locknuts at each box or can, inside and outside.

C. Three-piece couplings: Hot dip galvanized, cast malleable iron.

D. Insulating bushings: Threaded polypropylene or thermosetting phenolic rated 150-degree C minimum.

E. Insulated grounding bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.

F. Insulated metallic bushings: Threaded cast malleable iron body with plastic insulated throat rated 150-degrees C.

G. All fittings and connectors shall be threaded.

2.03 PVC INSULATED GALVANIZED RIGID STEEL CONDUIT (PVC GRS)

A. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and NEMA RN-1 with nominal 20 or 40 mil thermoplastic vinyl coating, heat fused and bonded to the exterior of the conduit.

B. Fittings: Conduit couplings and connectors shall be as specified for galvanized rigid steel conduit and shall be factory PVC coated with an insulating jacket equivalent to that of the coated material.

2.04 INTERMEDIATE METAL CONDUIT (IMC)

A. Conduit: Hot dip galvanized steel meeting the requirements of CEC Article 345 and conforming to ANSI C80.6 and UL 1242.

B. Fittings: Conduit couplings, connector and bushing shall be as specified for galvanized rigid steel conduit. Integral retractable type IMC couplings are also acceptable.

2.05 ELECTRICAL METALLIC TUBING (EMT)

A. Conduit: Shall be formed of cold rolled strip steel, electrical resistance welded continuously along the longitudinal seam and hot dip galvanized after fabrication. Conduit shall conform to ANSI C80.3 Specifications and shall meet UL requirements.

B. Set screw type couplings: Hot dip galvanized, steel, UL listed concrete tight. Use set screw type couplings with four setscrews each of conduit sizes over 2 inches. Setscrews shall be of case-hardened steel with hex-head and cup point to firmly seat in wall of conduit for positive grounding.

C. Set screw type connectors: Hot dip galvanized, steel, UL listed concrete tight with male hub and insulated plastic throat, 150-degree C temperature rated. Setscrew shall be same as for couplings.

D. Raintight couplings: Hot dip galvanized, steel; UL listed raintight and concrete tight, using gland and ring compression type construction.

E. Raintight connectors: Hot dip galvanized, steel, UL listed raintight and concrete tight, with insulated throat, using gland and ring compression type construction.

2.06 FLEXIBLE METALLIC CONDUIT (FMC)

A. Conduit: Shall be fabricated in continuous lengths from galvanized steel strip, spirally wound and formed to provide an interlocking design and conforming to UL 1.

B. Fittings: Connectors shall be of the single screw clamp variety with steel or cast malleable iron bodies and threaded male hubs with insulated throats. Exception: Pressure cast screw-in connectors shall be acceptable for luminaire connection in suspended ceilings and cut-in outlet boxes within existing furred walls.

2.07 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC)

A. Conduit: Shall be fabricated in continuous lengths from galvanized steel strips, interlocking spirally wound, covered with extruded liquidtight jacket of polyvinyl chloride (PVC) and conforming to UL 360. Provide conduit with a continuous copper-bonding conductor wound spirally between the convolutions.

B. Fittings: Connector body and gland nut shall be of cadmium plated steel or cast malleable iron, with tapered, male, threaded hub; insulated throat and neoprene "O" ring gasket recessed into the face of the stop nut. The clamping gland shall be of molded nylon with an integral brass push-in ferrule.

2.08 MISCELLANEOUS CONDUIT FITTINGS AND PRODUCTS

A. Watertight conduit entrance seals: Steel or cast malleable iron bodies and pressure clamps with PVC sleeve, neoprene sealing grommets and PVC coated steel pressure rings. Fittings shall be supplied with neoprene sealing rings between the body and PVC sleeve.

B. Watertight cable sealing bushings: One piece, compression molded sealing ring with PVC coated steel pressure disks, stainless steel sealing screws and zinc plated cast malleable iron locking collar.

C. Expansion fittings: Multi-piece unit comprised of a hot dip galvanized malleable iron or steel body and outside pressure bussing designed to allow a maximum of 4" conduit movement (2" in either direction). Furnish with external braid tinned copper bonding jumper. Unit shall be UL listed for wet or dry locations.

D. Expansion/deflection couplings: Multi-piece unit comprised of a neoprene sleeve with internal flexible tinned copper braid attached to bronze end couplings with stainless steel bands. Coupling shall accommodate 0.75-inch deflection, expansion or contraction in any direction and allow 30-degree angular deflections. Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber jacket and stainless-steel jacket clamps. Unit shall comply with UL467 and UL514. Manufacturer shall be OZ/Gedney Type DX, Steel City Type EDF or equal.

E. Fire rated penetration seals:

1. UL building materials directory classified.

2. Conduit penetrations in fire rated separation shall be sealed with a UL classified fill, void or cavity material.

3. The fire rated sealant material shall be the product best suited for each type of penetration and may be a caulk, putty, composite sheet, or wrap/strip.

F. Standard products not herein specified:

1. Provide listing of standard electrical conduit hardware and fittings not herein specified for approval prior to use or installation, i.e. locknuts, bushings, etc.
2. Listing shall include Manufacturers name, part numbers and a written description of the item indicating type of material and construction.
3. Miscellaneous components shall be equal in quality, material and construction to similar items herein specified.

G. Hazardous area fittings: UL listed for the application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of conduit system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 APPLICATION

A. Galvanized rigid steel conduit (GRS) can be used in the following applications:

1. For feeders and branch circuits located indoors, concealed or exposed above suspended ceilings, in damp/wet locations, in crawl spaces, in attics, chases, furred spaces, equipment rooms, loading docks or in hazardous locations in accordance with CEC and local Codes.
2. For feeders and branch circuits concealed in concrete floors and walls when not in contact with earth.
3. For use where conduit is subject to physical damage.
4. For feeders and branch circuits installed exposed on the roof.

B. PVC insulated galvanized rigid steel conduit can be used in the following applications:

1. Use 40-mil coating for feeders and branch circuits in damp or wet locations.
2. Use 20- or 40-mil for feeders and branch circuits concealed in concrete walls or slabs in contact with earth.
3. Use 20- or 40-mil for runs beneath floor slabs on grade.
4. Use 40-mil for all below grade penetrations through floor slabs on grade or exterior walls.

C. Intermediate metal conduit (IMC): Can be used for the same application as galvanized rigid steel conduit as specified herein, except for hazardous locations prohibited by CEC or Local Codes.

D. Electrical metallic tubing (EMT): Can be used exposed or concealed for interior electrical feeders 4" and smaller, interior power and lighting branch circuits and low tension distribution system where run above suspended ceilings, in concrete slabs and walls not in contact with earth; in stud walls, furred spaces and crawl spaces. EMT shall not be installed exposed below 8 feet above the finish floor except within electrical, communication or signal rooms or closets (subject to physical damage).

E. Flexible metallic conduit (FMC): Can be used only in dry locations for connections from an adjacent outlet box or conduit to all motors, transformers, vibrating equipment or machinery, controllers,

solenoid valves, float and flow switches or similar devices and to luminaires installed in suspended ceilings.

F. Liquidtight flexible metallic conduit (LFMC): Can be used in wet or damp locations for connections from adjacent outlet box or conduit to all motors, transformers, vibrating equipment or machinery, controllers, solenoid valves, float and flow switches or similar devices. These areas are typically food preparation and dishwashing areas, sump wells, loading docks, pump rooms, exterior areas, etc.

G. Fire-Resistive Systems: Refer to CEC Article 728. All devices utilized, mountings, and supports shall be listed as part of the fire-resistive system.

3.03 PREPARATION

A. Locations of conduit runs shall be planned in advance of the installation and coordinated with ductwork, plumbing, ceiling and wall construction in the same areas and shall not unnecessarily cross other conduits or pipe, nor prevent removal of ceiling tiles or panels, nor block access to mechanical or electrical equipment.

B. Where practical, install conduits in groups in parallel vertical or horizontal runs and at elevations that avoid unnecessary offsets.

C. All conduits shall be run parallel or at right angles to the centerlines of columns and beams, whether routed exposed, concealed above suspended ceiling or in concrete slabs.

D. Conduits shall not be placed closer than 12-inches to a flue, parallel hot water, steam line or other heat producing source or three inches from such lines when crossing perpendicular to the runs.

E. Communications conduits shall not be placed closer than 12 inches to power, a flue, parallel hot water, steam line or other heat producing source or three inches from such lines when crossing perpendicular to the runs.

F. Exposed conduit installation shall not encroach into the ceiling height headroom of walkways or doorways. Where possible, install horizontal raceway runs above water and below steam piping.

G. The largest trade size conduits in concrete floor and wall slabs shall not exceed 1/3 the floor or wall thickness and conduits shall be spaced a minimum of three conduit diameters apart unless otherwise noted on the Drawings. All conduits shall be installed in the center of concrete slabs or wall and shall not be placed between reinforcing steel and the bottom of floor slabs.

H. In long runs of conduit, provide sufficient pull boxes inside buildings to facilitate pulling wires and cables, with spacing not to exceed 150-feet. Support pull boxes from structure independent of conduit supports. These pull boxes are not indicated on the Drawings.

I. Provide all reasonably inferred standard conduits fitting and products required to complete conduit installation to meet the intended application whether noted, indicated, or specified in the Contract Documents or not.

J. Connect recessed luminaires to conduit runs with maximum six feet of flexible metal conduit.

3.04 INSTALLATION

A. Install conduit in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Minimum Conduit Size: Unless otherwise noted herein or on Drawings, minimum conduit size shall be 3/4" for interior applications and 1" for exterior and underground applications.

C. Minimum Communication and Signal Conduit Size: Unless otherwise noted herein or on Drawings, minimum conduit size shall be 1" for interior applications and 2" for exterior and underground applications.

D. All conduit sizes indicated on the Drawings are sized for copper conductors with THHN/THWN insulation. If conductor type or size is changed the Contractor shall be responsible for resizing conduits upward to meet Code.

E. All communication and signal conduit sizes indicated on the Drawings are sized for 40% fill or less for category 6 or 6A cable. If cable type or size is changed the Contractor shall be responsible for resizing conduits upward to meet a maximum 40% fill.

F. In general, all conduit work shall be concealed where possible. Exceptions shall be electrical, communication and mechanical rooms, exposed ceiling areas, and parking garages.

G. Conduit connections to motors and surface cabinets shall be concealed, except for electrical, communication and mechanical rooms, or unless exposed Work is clearly called for on the Drawings.

H. Install conduits in complete runs before pulling in cables or wires.

I. Install conduit free from dented, bruises or deformations. Remove and replace any damaged conduits with new undamaged material.

J. Conduits shall be well protected and tightly covered during construction using metallic bushings and bushing "pennies" to seal open ends.

K. In making joints in rigid steel conduit, ream conduit smooth after cutting and threading. Coat all field-threaded joints with UL approved conductive type compound to ensure low resistance ground continuity through conduit and to prevent seizing and corrosion.

L. Clean any conduit in which moisture or any foreign matter has collected before pulling in conductors. Paint all field-threaded joints to prevent corrosion.

M. In all empty conduits or ducts, install a “True Tape” conduit measuring tape line to provide overall conduit length for determining length of cables/conductors for future use.

N. Conduit systems shall be mechanically and electrically continuous throughout. Install code size, insulated, copper, green-grounding conductors in all conduit runs for branch circuits and feeders. This conductor is not indicated on the Drawings. Refer to Section 260526: Grounding and Bonding.

O. Metallic conduit shall not be in contact with other dissimilar metal pipes (i.e. plumbing).

P. Make bends with standard conduit bending hand tool or machines. The use of any item not specifically designed for the bending of electrical conduit is strictly prohibited.

Q. A run of conduit between terminations at wire pulling points shall not contain more than the equivalent of four quarter bends (360-degrees, total).

R. A run of communications and signal conduit between terminations at wire pulling points shall not contain more than the equivalent of two quarter bends (180-degrees, total).

S. Emergency power raceway system: Install entirely independent of other raceway systems, except where specifically allowed by CEC Article 517.

3.05 PENETRATIONS

A. Locate penetrations and holes in advance where they are proposed in the structural sections such as footings, beams, wall, etc. Penetrations are acceptable only when the following occurs:

1. Where indicated on the Structural Drawings.

2. As approved by the Structural Engineer prior to construction and after submittal of Drawing showing location, size, and position of each penetration.

B. Cutting or holes:

1. Cut holes through concrete, masonry block or brick floors and floors of structure with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Structural Engineer as required by limited working space. Obtain the approval of the Structural Engineer prior to drilling through structural sections.

2. Provide sleeves or “can outs” for cast-in-place concrete floors and walls. Following conduit installation, seal all penetrations using non-iron bearing, chloride free, non-shrinking, dry-pack grouting compounds; or fire rated penetration-sealing materials.

3. Cut holes for conduit penetrations through non-concrete and non-masonry walls, partitions, or floors with a hole saw. The hole shall be only as large as required to accommodate the size of the conduit.

4. Provide single piece escutcheon plates around all exposed conduit penetrations in public places.

C. Sealing:

1. Non-rated penetrations: Pack opening around conduits with non-flammable insulating material and seal with gypsum wallboard taping compound.

2. Fire stop: Where conduits, wireways and other electrical raceways pass through fire rated partitions, walls, smoke partitions or floor; install a UL classified fire stop material to provide an effective barrier against the spread of fire, smoke, and gases. Completely fill and seal clearances between raceways and openings with the fire stop material.

D. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight as specified in Division 07: Sealants and Caulking.

1. Install specified watertight conduit entrance seals at all below grade wall and floor penetrations. Conduits penetrating exterior building walls and building floor slab shall be PVC coated rigid galvanized steel.

2. For roof penetrations furnish and install roof flashing, counter flashing and pitch-pockets as specified under Roofing and Sheet Metal Sections of the Specifications.

3. Provide membrane clamps and cable sealing fittings for any conduit that horizontally penetrates the waterproof membrane.

4. Conduits that horizontally penetrate a waterproof membrane shall fall away from and below the penetration on the exterior side a minimum of two times the conduit diameters.

3.06 CONCEALED IN CONCRETE

A. Install conduits approximately in the center of the slab so that there will be a minimum of 3/4-inch of concrete around the conduits.

B. Installation of conduit in structural concrete that is less than three inches thick is prohibited. Topping slabs, maintenance pads and curbs are exempted.

C. Tie conduits to reinforcing rods or otherwise secure them to prevent sagging or shifting during concrete placement. Run conduit larger than 1-inch trade size, parallel with or at right angles to the main reinforcement; where at right angles to the reinforcement, the conduit shall be close to one of the supports of the slab.

D. Where nonmetallic conduit or tubing is used, raceways must be converted to PVC coated rigid steel conduit before rising above floor.

E. Make couplings and connections watertight.

F. Protect stub-ups from damage where conduits rise from floor slabs. Arrange so curved portion of bends is not visible above the finished slab.

3.07 TERMINATIONS AND JOINTS

A. Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings except as otherwise indicated.

B. Raceways shall be joined using specified couplings or transition couplings where dissimilar raceway systems are joined.

C. Conduits shall be securely fastened to cabinets, boxes and gutters using two locknuts and an insulating bushing or specified insulated connectors. Where joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system. Where terminations are subject to vibration, use bonding bushings or wedges to assure electrical continuity. Where subject to vibration or dampness, use insulating bushings to protect conductors. Install grounding bushings or bonding jumpers on all conduits terminating at concentric or eccentric knockouts.

D. Conduit terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using specified connectors and hubs.

E. Stub-up connections: Extend conduits through concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; flexible metal conduit may be used 6 inches above the floor. Where equipment connections are not made under this contract, install screwdriver operated threaded flush plugs with floor.

F. Install specified cable sealing bushings on all conduits originating outside the building walls and terminating in switchgear, cabinets, or gutters inside the building. Install cable sealing bushings or raceway seal for conduit terminations in all grade level or below grade exterior pull, junction, or outlet boxes.

G. Raceway seal: Inject into wire filled raceways, a pre-formulated rigid 2 lbs. density polyurethane foam which expands a minimum 35 times its original bulk. Foam shall have the physical properties of water vapor transmission of 1.2 to 3.0 perms: water absorption less than 2% by volume, fungus and bacterial resistant. Foam shall permanent seal against water, moisture, insects, and rodents. Install raceway sealing foam at the following points:

1. Where conduits pass from warm locations to cold locations to prevent passage of water vapor (such as refrigerated spaces, constant temperature rooms, air-conditioned spaces, etc.).
2. Where conduits enter buildings from below grade.

H. Install expansion couplings where any conduit crosses a building separation or expansion joint as follows:

1. Conduits three inches and larger, shall be rigidly secured to the building structure on opposite sides of a building expansion joint and provided with expansion or deflection couplings. Install the couplings in accordance with the Manufacturer's recommendations.
2. Conduits smaller than three inches shall be rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes on both sides of the joint. Connect conduits to junction boxes with 15 inches of slack flexible conduit. Flexible conduit shall have a green copper ground-bonding jumper installed. For concrete embedded conduit, use expansion and deflection couplings as specified above for three inches and larger conduits.

I. Use short length (maximum of 6ft) of the appropriate FMC or LFMC conduit for connections to motors and other electrical equipment subject to movement, vibration, misalignment, cramped quarters, or noise transmission. Provide liquidtight flexible metal conduit for installation in exterior locations, moisture or humidity-laden atmosphere, corrosive atmosphere, water hose or spray wash-down operations and locations subject to seepage or dripping of oil, grease, or water. Provide a green ground wire with FMC or LFMC conduit.

3.08 HAZARDOUS LOCATIONS

A. Use rigid steel conduit only.

B. Install UL approved sealing fittings that prevent passage of explosive vapors in accordance with the Manufacturers written instructions. Locate fittings at suitable, approved, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank coverplate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points and elsewhere as indicated:

1. Where conduits enter or leave hazardous locations.
2. At luminaires, switches, receptacles and as required by the CEC.

3.09 SUPPORTS

A. Provide supports for raceways as specified in Section 260529: Electrical Hangers and Supports.

B. All raceways systems shall be secured to building structures using specified fasteners, clamps and hangers spaced according to the CEC.

C. Support single runs of conduit using one-hole pipe straps. Where run horizontally on walls in damp or wet locations, install "clamp backs" to space conduit off the surface.

D. Multiple conduit runs shall be supported using "trapeze" hangers fabricated from specified construction channel, mounted to 3/8-inch diameter, threaded steel rods secured to building structures. Fasten conduit to construction channel with standard one-hole pipe clamps or the equivalent. Provide lateral seismic bracing for hangers.

E. Individual 1/2" and 3/4" conduits installed above suspended ceilings may be attached to the ceiling's hanger wire using spring steel support clips provided that not more than two conduits are attached to any single support wire.

F. Support exposed vertical conduit runs at each floor level, independent of cabinets or switches to which they run, by means of acceptable supports.

G. Fasteners and supports in solid masonry and concrete:

1. Use steel or malleable iron concrete inserts set in place prior to placing the concrete.

2. After concrete installation:

a. Steel expansion anchors not less than ¼ inch bolt size and not less than 1-1/8” embedment.

b. Power set fasteners not less than ¼ inch diameter with depth of penetration not less than three inches.

c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.

H. Hollow masonry: Toggle bolts are permitted. Bolts supported only by masonry block are not acceptable.

I. Metal structures: Use machine screw fasteners or other devices specifically designed and approved for the application.

END OF SECTION

SECTION 26 05 33

BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Wall and ceiling outlet boxes.

2. Pull and junction boxes.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

2. Division 08: Access doors. Wall and ceiling access doors.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified.

1. American National Standards Institute/National Electrical Manufacturer Association:

ANSI/NEMA OS-1;	Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports.
ANSI/NEMA OS-2;	Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
NEMA 250;	Enclosures for Electrical Equipment (1000 volts maximum).

2. Underwriters Laboratories (UL):

UL 50;	Enclosures for Electrical Equipment.
UL 514A;	Metallic Outlet Boxes.
UL 1773;	Termination Boxes.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.

2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.

3. Submit Manufacturer's installation instructions.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Outlet and junction boxes:

a. Spring City Electrical Manufacturing Co.

b. Thomas & Betts Corp.

c. Raco, Inc.

2. Cast boxes:

a. Appleton Electric Co.

b. Crouse-Hinds.

3. Floor boxes:

a. Legrand.

b. Hubbell Inc.

c. Raceway Components, Inc.

4. Pullboxes:

a. Circle AW Products.

b. Hoffman Engineering Co.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 OUTLET BOXES

A. Standard outlet box:

1. Provide galvanized, one-piece die formed or drawn steel or welded, knockout type box of size and configuration best suited to the application indicated on the Drawings.

2. 4-inch square by 2-1/8-inch deep shall be minimum box size.

3. ANSI/NEMA OS 1.

B. Concrete box:

1. Provide galvanized steel, 4-inch octagon rings with mounting lugs, backplate and adapter ring as required.

2. Select height as necessary to position knockouts above concrete reinforcing steel.

3. ANSI/NEMA OS 1.

C. Tile box:

1. Provide outlet boxes for installation in tile or concrete block walls.
2. Standard outlet boxes with raised, square corners and device covers are acceptable.
3. ANSI/NEMA OS 1.

D. Cast metal outlet body:

1. Provide 4-inch round, galvanized cast iron alloy with threaded hubs and mounting lugs as required.
2. Provide boxes with cast cover plates of the same material as the box and neoprene cover gaskets.

E. Conduit outlet body: Provide malleable iron, oblong conduit outlet bodies with threaded conduit hubs and neoprene gasket, cast iron covers.

2.03 PULL AND JUNCTION BOXES

A. Sheet metal pull and junction box:

1. Provide standard outlet or concrete ring boxes wherever possible; otherwise use minimum 16-gauge galvanized sheet metal, NEMA 1 boxes, sized to Code requirements with covers secured by cadmium plated machine screws located 6 inches on centers.
2. ANSI/NEMA OS 1.

B. Flush mounted pullboxes and junction boxes: Provide overlapping covers with flush head cover retaining screws, prime coated.

2.04 FLOOR BOXES

A. Refer to Section 262726: Wiring Devices for floor mounted service boxes.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of box installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 PREPARATION

A. Install all outlet boxes flush with building walls, ceilings, and floors except where boxes are installed in mechanical and electrical rooms, in cabinetry, above accessible ceilings or where exposed Work is called for on the Drawings.

B. Locate pullboxes and junction boxes in concealed locations above removable ceilings or exposed in electrical rooms, utility rooms or storage areas.

C. Install outlet boxes at the locations and elevations indicated on the Drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.

D. Locate switch outlet boxes on the latch side of doorways unless otherwise indicated.

E. Locate outlet boxes above hung ceilings having concealed suspension systems, adjacent to openings for removable recessed luminaires.

F. Do not install outlet boxes back-to-back, separate boxes by at least 6". In fire-rated walls separate boxes by at least 24" and wall stud.

G. Adjust position of outlet boxes in finished masonry walls to suit masonry course lines. Coordinate cutting of masonry walls to achieve neat openings for boxes.

3.03 INSTALLATION

A. Install boxes in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Locate electrical boxes as indicated on Drawings and as required for splices, taps, wire pulling, equipment connections and Code compliance.

C. Install junction or pullboxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Note that these boxes are not indicated on the Drawings.

D. Install raised covers (plaster rings) on all outlet boxes in stud walls or in furred, suspended, or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.

E. Leave no unused openings in any box. Install close-up plugs as required to seal openings.

F. Provide cast metal boxes with gasketed cast metal cover plates where boxes are exposed in damp or wet locations.

G. Welded outlet boxes shall only be used in concealed interior installations.

H. Provide precast concrete boxes in exterior planting areas, walkways, roads etc.

I. Provide an access panel in permanent ceiling or wall where boxes are installed and will be inaccessible.

J. For boxes mounted in exterior walls, make sure that there is insulation behind outlet boxes to prevent condensation in boxes.

K. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height to agree with required location for equipment served.

L. Use conduit outlet bodies to facilitate pulling of conductors or to make changes in conduit direction only. Do not make splices in conduit outlet bodies.

M. Add additional sheet rock as necessary to maintain original fire rating of walls where boxes are installed.

N. Install galvanized steel coverplates on boxes in unfinished areas, above accessible ceilings and on surface mounted outlets.

3.04 SUPPORTS

A. Provide boxes installed in metal stud walls with brackets designed for attaching directly to the studs or mount boxes on specified box supports.

B. Mount boxes, installed in suspended ceilings of gypsum board or lath and plaster construction, to 16-gauge metal channel bars attached to main ceiling runners.

C. Support boxes independently of conduit system.

D. Support boxes, installed in suspended ceilings supporting acoustical tiles or panels, directly from the structure above wherever pendant mounted luminaires are to be installed from the box.

E. Support boxes mounted above suspended acoustical tile ceilings, directly from the structure above.

END OF SECTION

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Electrical equipment nameplates.
2. Panelboard directories.
3. Wire and cable identification.
4. Buried electrical line warnings.
5. Junction box identification.
6. Warning and caution signs.
7. Inscribed device coverplates.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Division 09: Painting.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein.
2. Schedules for nameplates to be furnished.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Conduit and wire markers:

a. Thomas & Betts Corp.
b. Brady.
c. Griffolyn.

2. Inscription Tape:
   a. Kroy.
   b. Merlin.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 NAMEPLATES

A. Type NP: Engraved, plastic laminated labels, signs, and instruction plates. Engrave stock melamine plastic laminate 1/16-inch minimum thickness for signs up to 20-square inches or 8-inches in length; 1/8-inch thick for larger sizes. Engraved nameplates shall have white letters and be punched for mechanical fasteners.

B. Color and letter height as specified in Part 3: Execution.

2.03 LEGEND PLATES

A. Type LP: Die-stamped metal legend plate with mounting hole and positioning key for panel mounted operator devices, i.e. motor control pilot devices, hand-off-auto switches, reset buttons, etc.

B. Stamped characters to be paint filled.

2.04 BRASS TAGS

A. Type BT: Metal tags with die-stamped legend, punched for fastener.

B. Dimensions: 2" diameter 19 gauge.

2.05 PANELBOARD DIRECTORIES (400 AMP OR LESS)

A. Directories: A 6" x 8" minimum size circuit directory frame and card with clear plastic covering shall be provided inside the inner panel door.

B. Circuit numbering: Starting at the top, odd numbered circuits in sequence down the left-hand side and even numbered circuits down the right-hand side. Multi-section panelboards shall have continuous consecutive circuit numbers, i.e. Section 1 (circuit numbers 1-42), Section 2 (circuit numbers 43-84), Section 3 (circuit numbers 85-126) for all 42-pole panelboards. For 84-pole panelboards the numbering is Section 1 (circuit numbers 1-84), Section 2 (circuit numbers (85-168), etc.

2.06 WIRE AND TERMINAL MARKERS

A. Provide self-adhering, pre-printed, machine printable or write-on, self-laminating vinyl wrap around strips.

B. Blank markers shall be inscribed using the printer or pen recommended by Manufacturer for this purpose.

2.07 CONDUCTOR PHASE MARKERS

A. Colored vinyl plastic electrical tape, 3/4" wide, for identification of phase conductors. Scotch 35 Brand Tape or equal.

2.08 UNDERGROUND CONDUIT MARKER

A. 6-inch wide, yellow polyethylene tape, with continuous black imprinting reading "Caution - Buried Electric Line Below".

2.09 INSCRIBED DEVICE COVERPLATES

A. Coverplate material shall be as specified in Section 262726: Wiring Devices.

B. Methods of inscription: (Unless otherwise noted)

1. Type-on-tape:

a. Imprinted or thermal transfer characters onto tape lettering system.

b. Tape trimmer.

c. Matte finish spray-on clear coating.

2. Engraving:

a. 1/8" high letters.

b. Paint filled letters finished in black.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of identification device installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 NAMEPLATES

A. Installation:

1. Degrease and clean surfaces to receive nameplates.

2. Install nameplates parallel to equipment lines.

3. Secure nameplates to equipment fronts using machine screws.

B. Provide type 'NP' color coded nameplates that present, as applicable, the following information:

1. Equipment or device designation:

a. Equipment designations shall conform to the following:

1) Building number designation – 1.

2) Power source:

a) Normal - __

b) Emergency – E

3) Equipment description:

a) Main switchboard – MS

b) 277/480volt distribution board – HD

c) 277/480volt panelboard – H

d) 120/208volt distribution board – LD

e) 120/208volt panelboard – L

f) Transformer – TX

4) Floor number where equipment is located – 03

5) Equipment designation – B

b. Example: 2EHD03A

1) Building number 2.

2) Emergency source.

3) 277/480volt distribution board.

4) Floor level 03.

5) Board designation A

2. Amperage, KVA or horsepower rating, where applicable.

3. Voltage or signal system name.

4. Source of power or control.

5. Examples:

a. Boards: 2EHD03A; 1200A, 277/480volt, 3-phase, 4-wire; Served from 2EATS03A

b. Transformers: 2ETX03A; 150KVA, 480volt primary, 120/208volt, 3-phase, 4-wire secondary; Served from 2EHD03A; Load Served: 2EL03A

c. Disconnects or Individual Motor Starters: EF-1; 20HP; 480volt, 3-phase,3-wire; Served from 2EHD03A

C. Nameplates for power system distribution equipment and devices are to be black.

D. Nameplates for signal systems equipment and devices are to be black except as follows:

1. Fire alarm and life safety - Red.

E. Minimum letter height shall be as follows:

1. For panelboards, switchboards, battery panels, etc.: ½ inch letters to identify equipment designation. Use ¼ inch letters to identify voltage, phase, wires, etc.

2. For individual circuit breakers, switches and motor starters in panelboards, distribution boards, and switchboards use 3/8-inch letters to identify equipment designation. Use 1/8-inch letters to identify all other.

3. For individual mounted circuit breakers, disconnect switches, enclosed switches and motor starters use 3/8-inch letters to identify equipment designation. Use 1/8" letters to identify all other.

4. For transformers use ½-inch letters to identify equipment designation. Use ¼-inch letters to identify primary and secondary voltages, etc.

5. For equipment cabinets, terminal cabinets, control panels and other cabinet enclosed apparatus use 3/8-inch letters to identify equipment designation.

3.03 LEGEND PLATES

A. Provide panel-mounted operators devices such as pilot lights, reset buttons, “HAND-OFF-AUTO” switches, etc.

3.04 BRASS TAGS

A. Provide type BT tags for individual ground conductors to exposed ground bus indicating connection i.e. "UFER", "Cold water bond", etc.

B. Provide tags for all feeder cables in underground vaults and pull boxes.

C. Provide tags for empty conduits in underground vault, pull boxes and stubs.

3.05 PANELBOARD DIRECTORIES (400AMP OR LESS)

A. Provide typewritten directories arranged in numerical order denoting loads served by room number or area for each circuit.

B. Verify room numbers or area designation with Project Manager.

C. Mount panelboard directories in a minimum 6" x 8" metal frame under clear plastic cover inside every panelboard.

3.06 WIRE AND CABLE IDENTIFICATION

A. Provide wire markers on each conductor in panelboards, pull boxes, outlet, and junction boxes and at load connection. Identify with branch circuit or feeder number for power and lighting circuits and with control wire number as indicated on equipment Manufacturer's Shop Drawings for control wiring.

B. Provide colored phase markers for conductors as noted in Section 260519: Building Wire and Cable. Apply colored, pressure sensitive plastic tape in half-lapped turns for a distance of 3-inches from terminal points and in boxes where splices or taps are made. Apply the last two laps of tape with no tension to prevent possible unwinding. Do not cover cable identification markings by taping.

3.07 UNDERGROUND CONDUIT MARKERS

A. During trench backfilling, for exterior underground power, signal, and communications lines, install continuous underground plastic line marker, located directly above line at 6 to 8 inches below finished grade. Where multiple lines installed in a common trench or concrete envelope, do not exceed an overall width of 16 inches; install a single line marker.

3.08 JUNCTION BOX IDENTIFICATION

A. The cover of junction, pull and connection boxes for both power and signal systems, located above suspended ceilings and below ceilings in non-public areas, shall be clearly marked with a permanent ink felt pen. Identify the circuit(s) (panel designation and circuit numbers) contained in each box, unless otherwise noted or specified.

3.09 WARNING, CAUTION, AND INSTRUCTION SIGNS

A. Provide warning, caution or instruction signs where required by CEC, where indicated or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect. Install engraved plastic laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install butyrate signs with metal backing for outdoor items.

B. Emergency Operating Signs: Install engraved laminate signs with white letters on red background with minimum 3/8-inch high lettering for emergency instructions on power transfer, load shedding or other emergency operations.

C. Elevator Machine Rooms(s): Provide warning sign for each elevator controller disconnect to read "Warning - Part of the Control Panel is not De-energized by this Switch."

D. Elevator car light and fan switch: Provide signage indicating elevator number serving and function of each switch.

3.10 INSCRIBED DEVICE COVERPLATE

A. General:

1. Lettering type: Helvetica, 12 point or 1/8" high.
2. Color of characters shall be black.
3. Locate the top of the inscription ½” below the top edge of the coverplate.
4. Inscription shall be centered and square with coverplate.

B. Application:

1. Type-on-tape inscriptions shall be provided for the following devices:
   a. Receptacles.
   b. Outlets in surface raceways.
   c. Telecommunication outlets.
2. Engraved inscriptions shall be provided for the following devices:
   a. Multi-ganged switches.
   b. Special purpose switches.
3. Type-on-tape installation:
   a. Tape shall be trimmed to the height of the letters.
   b. Trim tape length to ¼-inch back from each edge of coverplate.
   c. Contractor hands shall be clean or covered with surgical type glove prior to application of tape. Tape installations with visible fingerprints or smudges will not be acceptable.

END OF SECTION

SECTION 26 24 13

SWITCHBOARDS

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Main service switchboard.
2. Distribution switchboards (800 amps and greater).
3. Outdoor enclosure and accessories.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Division 03: Cast-in-place concrete. Equipment housekeeping pad.
3. Division 09: Painting. Touch-up of painted surfaces.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. American National Standards Institute, Inc. (ANSI):

ANSI C12;	Code for Electricity Metering.

2. Underwriters Laboratories, Inc. (UL):

UL 486E;	Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors.
UL 489;	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.
UL 869A;	Service Equipment.
UL 891;	Dead-Front Switchboards.
UL 943;	Ground-Fault Circuit Interrupters.
UL 1053;	Ground-Fault Sensing and Relaying Equipment.

3. National Electrical Manufacturer Association (NEMA):

NEMA AB1;	Molded Case Circuit Breakers.
NEMA PB 2;	Deadfront Distribution Switchboards.

NEMA PB 2.1;	General Instruction for Proper Handling, Installation, Operation and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or less.
NEMA PB 2.2;	Application Guide Ground Fault Protective Devices for Equipment.
NEMA SG5;	Power Switchgear Assemblies.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Shop Drawings to include:
   a. Front, plan, and side view elevations with overall dimensions.
   b. Conduit entrance locations and requirements.
   c. Nameplate legends; size and number of bus bars per phase, neutral and ground.
   d. Switchboard instrument details and accessories.
   e. Electrical characteristics including voltage, frame size and trip rating and withstand ratings.
3. Outdoor weatherproof equipment enclosure and accessories.
4. Submit Manufacturer's installation instructions.
5. Complete Bill of Material listing all components.
6. Final test results.
7. Warranty.

B. Dimensions and configurations of switchboards shall conform to the space allocated on the Drawings. The Contractor shall submit a revised layout if equipment furnished varies in size from that indicated on Drawings for the Engineer's approval.

C. Service entrance switchboard utility metering sections shall be submitted to the local electrical utility company for approval prior to submission to the Engineer. A letter of acceptance from utility company shall be included in submittal package.

1.04 OPERATION AND MAINTENANCE MANUAL

A. Supply operation and maintenance manuals in accordance with the requirements of Section 260010: Basic Electrical Requirements, to include the following:

1. A detailed explanation of the operation of the system.
2. Instructions for routine maintenance.
3. Pictorial parts list and part numbers.

4. Pictorial and schematic Electrical Drawings of wiring systems, including operating and safety devices, control panels, instrumentation, and annunciators.
5. Telephone numbers for the authorized parts and service distributors.
6. Include all service bulletins and torque Specifications for all terminations.
7. Final testing report.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

C. Independent Testing Agency qualifications: Refer to Section 260010: Basic Electrical Requirements.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Switchboard components shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner. Components shall be properly packaged in factory-fabricated containers and mounted on shipping skids.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with NEMA PB2.1 and Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.07 WARRANTY

A. Units and components offered under this Section shall be covered by a ***1***-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

1.08 EXTRA MATERIAL

A. Provide one spray can of matching finish paint for touching up damaged surfaces after installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Square D.
2. ABB/ General Electric.
3. Eaton.

4. Siemens.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 SWITCHBOARDS - GENERAL

A. Enclosure:

1. Each switchboard shall consist of a dead front, completely metal enclosed self-supporting structure. Construction shall consist of vertical sections of the universal frame type bolted together and braced with self-tapping bolts. Sides, top and rear shall be covered with captive-bolt fastened steel plates having formed edges all around. Front plates shall be sectionalized and removable. All plates shall be fabricated from 12-gage steel and shall have die-formed edges all around. The switchboard frame shall be suitable for use as floor sills in indoor installations. Corners shall be reinforced with rigged gussets internal and external to the structural members.

2. Switchboards shall have depth as required to house all equipment contained within it. Switchboard shall be constructed so that the back and front of all sections align. Construction of the board shall allow maintenance of incoming line terminations, device connections and all bus bolted connections.

3. All devices shall be accessible and removable from the front unless rear access is indicated on the Drawings.

4. Provide necessary hardware to permit locking every overcurrent protective device handle in the "OFF" position.

5. Provide hinged access doors to all termination, meter, and relay compartments with knurled and slotted large head captive-bolts. The design shall allow access to compartments without tools and without removing any panels.

6. Furnish cable pull sections or top cable pull boxes where indicated on the Drawings complete with cable tie down supports. Where cable pull section or pull boxes contain utility service cables, provide utility acceptable sealing means.

7. Switchboard shall be suitable for use as service entrance equipment and be labeled in accordance with UL requirements.

8. Utility metering compartment section shall be fabricated to meet all utility company requirements. Where separate vertical section is required for utility metering, match and align with switchboard enclosure.

B. Bus assembly and terminations:

1. The switchboard bussing shall be highly conductive silver-plated copper with sufficient cross-sectional area to meet UL Standard 891 temperature rise requirements.

2. Bus arrangement shall be Phase A-B-C-N left-to-right, top-to-bottom and front-to-rear as viewed from the front. Horizontal and vertical bus ampere rating shall be uniform from end-to-end.

3. All bussing to and from an overcurrent protective device shall be rated to the frame sizing, not the trip rating.

4. Where "SPACE" is indicated in the switchboards, cross connectors and mounting hardware shall be installed to match the frame size ampere rating noted on the Electrical Drawings. All "SPACES" shall be ready for installation of overcurrent protective devices at a future time.
5. Shipping splits and provisions for future bus extension shall be provided with necessary bus splices.
6. Each switchboard shall contain a full length, bottom/front located copper ground bus that is securely connected to each vertical section. Ground bus shall be sized in accordance with UL 891, Table 25.1.
7. Termination lugs: High compression circumference crimped type rated for use with aluminum/copper conductors.
8. Switchboards shall be fully rated for a minimum of 65,000 AIC or as indicated on the Drawings.
9. Neutral bus shall be 100-percent rated unless otherwise indicated on the Drawings.
10. Main service switchboards:
    a. Removable neutral link: Provide removable bolted bus section for the purpose of disconnecting the ground circuit conductor from the premises wiring at the supply side of the service in accordance with CEC article 230-75.
    b. Main bonding jumper: Connection between the grounded circuit conductor and the equipment ground conductor at the supply side of the service. Size in accordance with CEC table 250-94 or 12-1/2% of the area of the largest phase conductor in accordance with CEC article 250-79(c).

C. Switching and overcurrent protective devices:
1. Refer to Section 262816: Overcurrent Protective Devices.
2. Main overcurrent protective devices(s) shall be fixed mounted molded case circuit breaker with interrupting rating and frame and trip ratings as indicated on Drawings.
3. Feeder overcurrent protective device(s) shall be fixed mounted molded case circuit breaker with frame and trip rating as indicated on Drawings.
4. Devices interrupting rating shall match that of switchboard for which the device is installed.
5. Series ratings of overcurrent protective devices is not acceptable unless specifically noted on the Drawings.
6. Devices shall be manually operated unless shunt trip and/or electrically operated devices are indicated on Drawings.

D. Ground fault protection:
1. General: A solid-state, zone-interlocked, ground fault protection system shall be provided integral on the main device(s) as indicated on Drawings. It shall consist of integral phase current sensors, appropriate solid-state relaying equipment to provide

the desired ground fault current sensitivity and time-current response characteristics. Provide neutral ground fault current transformer for four wire systems.

2. Device settings: Adjustable pickup current sensitivity for ground fault currents from 200 amperes to 1200 amperes shall be provided. A calibrated dial shall be provided for setting the current pickup point in the field. Time delay shall be adjustable from 0 to 60 cycles. Settings for individual relays shall be as directed by the short circuit/coordination study specified in Section 260060: Power System Study. A locking screw shall be provided to retain both adjustments at desired setting.
3. All overcurrent devices shall be independently time coordinated irrespective of zone interlocking to allow the last downstream level of ground fault devices to be time coordinated, i.e. it shall NOT revert to the lowest time setting.

E. Surge Protective Devices:

1. Refer to Section 264313: Surge Protective Devices.

F. Instrumentation and controls:

1. Switchboards shall have a digital meter unit (DMU) as indicated on the Drawings. DMU shall be by the same manufacturer as the switchboard.
2. Meter potential circuits shall be fused. Potential transformers if required for the monitoring devices shall be provided with fuses in the primary.
3. Meter current circuits shall have shorting terminal blocks between the meter and the current transformers. Current transformers shall be ring type (one per phase) with ratio, thermal, and mechanical ratings coordinated with the application and protection.
4. Instrument transformer accuracy per IEEE C57.13.6:
   a. Current transformers must maintain 0.3% accuracy from 5% rated current through rating factor at rated burden.
   b. Voltage transformers must maintain 0.15% accuracy from 90% to 110% of rated voltage.
5. All internal devices (relays, transformers, etc.) shall be tagged as to rating and function with permanently fastened engraved nameplates.
6. Control and signal circuits: Control devices, i.e.: contactors, relays, time clocks, etc. shall be mounted in a separate compartment that is fully barrier from the overcurrent protective device compartments. Control devices shall be accessible through a separate hinged cover panel.
7. Relays: All relays shall be industrial control grade with a "ON" indicating neon light, hold down springs, minimum of 10amp rated contacts and a minimum of four form C contacts. Relays used for control power transfer shall have 20amp rated contacts. Do NOT use paralleled relays for relays with greater than 4-poles, use relays with the required number of poles. This is to prevent the situation where one relay fails, and half of the intended function is lost, which could be dangerous.

G. Refer to Electrical Drawings for the following:

1. Mounting style; voltage; terminal lug size, location, and quantity; bus ampacity; interrupting capacity of bus and overcurrent protective devices, quantity, poles, and rating of overcurrent protective devices. Note that the AIC value noted on the Drawings for distribution equipment is the minimum rating of all components; values are in RMS symmetrical amps.
2. If indicated on the Electrical Drawings, provide contactors, relays, time clocks, etc. mounted within switchboard.

H. Miscellaneous requirements:

1. Circuit numbering: Starting at the top, odd numbered circuits in sequence down the left-hand side and even numbered circuits down the right-hand side.
2. Nameplates: Engraved nameplates shall be provided for each device and all "SPACES" located in the switchboard. An engraved nameplate shall also be provided indicating the switchboard designation. See Section 260553: Electrical Identification for requirements.
3. All control wires shall be labeled with wire markers and referenced to the control wiring diagrams. Provide colored wires with colored stripes to facilitate troubleshooting and locating both ends of wires. Do not use wires with all the same wire color. Use fork, crimp type terminations on all control wires.
4. Provide a test block and plugs for voltage and current monitoring at each main switch. Provide engraved legend plates to indicate function of each test point.
5. Vertically mounted mains shall have the operating handle in the up position when energized.

I. Weatherproof outdoor enclosure and accessories:

1. Provide a NEMA 3R non-walk-in type weatherproof housing with hinged lockable access doors. Each section shall have a minimum of 13-inch deep vestibule. Provide a latch for each door to ensure adequate closing pressure to seal against harmful weather.
2. The weatherproof housings shall be provided with lifting eyes.

J. Finish:

1. Five step zinc phosphate pre-treatment, one coat of rust inhibiting dichromate primer and one coat of baked-on enamel finish, ANSI 61 (light gray).
2. A seven-step spray wash electroplate primer with final baked-on enamel finish; ANSI 61 (light gray) is an acceptable finish alternative.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of switchboard installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 PREPARATION

A. Ensure all conduit stub-ups for bottom entry into switchboard are in place and located as required per Shop Drawings.

B. Whether noted on the Drawings or not, provide a 4-inch high concrete housekeeping pad beneath equipment. Coordinate actual sizes of equipment based on approved Shop Drawings and extend pad 4-inches in all directions beyond overall dimension of base. Provide reinforcing bars as required structurally within pad to ensure proper support of equipment. In addition to housekeeping pad, add concrete working space min 48” depth.

3.03 INSTALLATION

A. Install switchboards in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Handling, storage, installation and energize of switchboards shall be carried out in accordance with latest edition of NEMA Publications PB 2.1.

C. Freestanding switchboards shall be accurately aligned, leveled, and bolted in place on full-length channels securely fastened to concrete floor.

D. Switchboards shall be anchored and braced to withstand seismic forces as calculated per Section 260010: Basic Electrical Requirements.

E. Provide mounting hardware brackets, bus bar drilling and filler pieces for all unused spaces.

F. "Train" interior wiring; bundle and clamp, using specified plastic wire wraps specified under Section 260519: Building Wire and Cable.

G. Replace any panel pieces, doors or trims having dents, bends, warps, or poor fit that may impede ready access, security, or integrity.

H. Conduits terminating in concentric, eccentric, or oversized knockouts at switchboards shall have ground bushings and bonding jumpers installed interconnecting all such conduits and the switchboards.

I. Check and tighten all bolts and connections with a torque wrench using Manufacturer's recommended values.

J. Visually inspect switchboards for rust and corrosion if signs of rust and corrosion are present, board shall be restored to new condition or replaced.

K. In damp and wet locations mount switchboard with a minimum 1 inch of air space between enclosure and the wall or other supporting material.

3.04 FIELD QUALITY CONTROL

A. Manufacturer's field service: Contractor shall arrange and pay for the services of a factory-authorized service representative to supervise the initial start-up, testing, and adjustment of the switchboard.

B. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Independent Testing Agency shall meet the requirements as outlined in Section 260010: Basic Electrical Requirements. Testing Agencies objectives shall be to:

1. Assure switchboard installation conforms to specified requirements and operates within specified tolerances.

2. Field test and inspect to ensure operation in accordance with Manufacturer's recommendations and Specifications.
3. Prepare final test report including results, observations, failures, adjustments, and remedies.
4. Apply label on switchboard upon satisfactory completion of tests and results.
5. Verify ratings and settings and make final adjustments.

C. At least three weeks prior to any testing, notify the Engineer so that arrangement can be made for witnessing test, if deemed necessary. All pretesting shall have been tested satisfactorily prior to the Engineer's witnessed test.

D. The Contractor shall supply a suitable and stable source of electrical power to each test site. The Testing Agency shall specify the specific power requirements.

E. Testing of overcurrent protective devices shall be done only after all devices are installed and prior to system being energized.

F. Prefunctional testing:

1. Provide Testing Agency with Contract Documents and Manufacturer instructions for installation and testing.
2. Visual and mechanical inspection:
   a. Compare nameplate information and connections to Contract Documents.
   b. Inspect for physical damage, defects alignment and fit.
   c. Verify appropriate anchorage, required clearances and correct alignment.
   d. Inspect doors, panels and sections for paint, dents, scratches, fit and missing hardware
   e. Check tightness of all control and power connections.
   f. Check that all covers, barriers, and doors are secure.
   g. Verify correct barrier installation.
   h. Verify that relays and overcurrent protective devices meet Drawing, power system study and specified requirements.
   i. Perform mechanical operational tests in accordance with Manufacturer's instructions.
   j. Exercise active components.
   k. Inspect control power and instrument transformers.
   l. Inspect insulators for evidence of physical damage or contaminated surfaces.
   m. Ground-fault protection:
      1) Verify ground connection is made ahead of neutral disconnect link and on line side of any ground fault sensor.

2) Verify neutral sensors are connected with correct polarity on both primary and secondary.

3) Verify all phase conductors and neutral pass through sensor in same direction for zero sequence systems.

4) Verify grounding conductors do not pass through zero sequence sensors.

5) Verify grounded conductor is solidly grounded.

6) Verify correct operation of self-test panel.

7) Set pickup and time-delay settings in accordance with Specifications. Record operation and test sequences as required by code.

3. Electrical tests:

a. Perform resistance tests through bus joints with low-resistance ohmmeter. Joints that cannot be directly measured due to permanently installed insulation wrap shall be indirectly measured from closest accessible connection.

b. Perform insulation-resistance tests on each bus section, phase-to-phase, and phase-to-ground, at 1000volt DC for 60-seconds. Investigate resistance values less than 50-megohms.

c. Perform over-potential test on each bus section, each phase-to-ground with phases not under test grounded, in accordance with Manufacturer's published data. Test voltage shall be applied for 60-seconds.

d. Perform insulation-resistance tests at 1000volt DC for 60-seconds on control wiring. Do not perform this test on wiring connected to solid-state components.

e. Perform current injection tests on the entire current circuit in each section of switchgear.

1) Perform current tests by primary injection, where possible, with magnitudes such that minimum of 1amp flows in secondary circuit.

2) Where primary injection is impractical, utilize secondary injection with minimum current of 1amp.

3) Test current at each device.

f. Perform tests on all instrument transformers in accordance with Manufacturer's written instructions.

g. Determine accuracy of meters and instruments per Manufacturer's instructions.

h. Perform the following tests on control power transformers:

1) Perform insulation-resistance test. Perform measurements from winding-to-winding and each winding-to-ground. Test voltages shall be determined in accordance with Manufacturer's instructions.

2) Perform secondary wiring integrity test. Disconnect transformer at secondary terminals and connect secondary wiring to correct secondary voltage. Confirm potential at all devices.

3) Verify correct secondary voltage by energizing primary winding with system voltage. Measure secondary voltage with secondary wiring disconnected.

i. Potential transformer circuits:

1) Perform insulation-resistance tests. Perform measurements from winding-to-winding and each winding-to-ground. Test voltages shall be determined in accordance with Manufacturer's instructions.

2) Perform secondary wiring integrity test. Disconnect transformer at secondary terminals and connect secondary wiring to correct secondary voltage.

3) Verify secondary voltage by energizing primary winding with system voltage. Measure secondary voltage with secondary wiring disconnected.

j. Ground resistance:

1) Measure system neutral-to-ground insulation-resistance with neutral disconnect link temporarily removed. Replace neutral disconnect link after test.

2) Measure insulation-resistance of control wiring at 1000volt DC for 60-seconds. Refer to Manufacturer's instruction for devices with solid-state components

k. Ground fault protection system:

1) Perform the following pickup tests using primary injection:

a) Verify relay does not operate at 90% of pickup setting.

b) Verify pickup is less than 125% of setting or 1200amps, whichever is smaller.

2) Measure time delay of the relay at 150% or greater of pickup.

l. Test overcurrent protection devices per Section 262816: Overcurrent Protective Devices.

4. Test values:

a. Bolt torque levels shall be in accordance with Manufacturer's requirements.

b. Compare bus connection resistances to values of similar connections.

c. Insulation-resistance values for bus, control wiring and control power transformers shall be in accordance with Manufacturer's published data. Values of insulation resistance less than Manufacturer's minimum levels should be investigated. Over-potential tests should not proceed until insulation-resistance levels are raised above minimum values.

d. Insulation shall withstand the over-potential test voltage applied.

e. Determine contact resistance in microhms. Resistance values shall not exceed high limit of normal range as indicated in Manufacturer's published data.

f. System neutral-to-ground insulation shall be a minimum of one megohm.

g. Ground fault protection systems relay timing shall be in accordance with Manufacturer's Specifications but must also be no longer than one second at 3000amps.

G. In the event that the system fails to function properly during the testing as a result of inadequate pretesting or preparation, the Contractor shall bear all costs incurred by the necessity for retesting including test equipment, transportation, subsistence and the Engineer's hourly rate.

H. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

I. Contractor shall submit the Testing Agency's final report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observation, deficiencies, and remedies. Test report shall be included in the operation and maintenance manuals.

3.05 CLEANING

A. Prior to energizing of switchboard, the Contractor shall thoroughly clean the interior of enclosure of all construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

B. Upon completion of Project prior to final acceptance the Contractor shall thoroughly clean both the interior and exterior of switchboard per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt, and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

3.06 TRAINING

A. Factory authorized service representative shall conduct a 4-hour training seminar for Owner's Representatives upon completion and acceptance of system. Instructions shall include safe operation, maintenance, and testing of equipment with both classroom training and hands-on instruction.

B. Contractor shall schedule training with a minimum of 7-days advance notice.

END OF SECTION

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Branch circuit panelboards.
2. Distribution panelboards (400amps to 800amps).

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified.

1. National Electrical Manufacturers Association (NEMA):

NEMA AB 1;	Molded Case Circuit Breakers.
NEMA PB 1;	Panelboards.
NEMA PB 1.1;	General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.

2. Underwriters Laboratories, Inc. (UL):

UL 67;	Panelboards.
UL 486E;	Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors.
UL 489;	Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.
UL 870;	Wireways, Auxiliary Gutters and Associated Fittings.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.

3. Shop Drawings: Include elevations, cabinet dimensions, gutter sizes, layout of contactors, relays, time clocks, lug sizes, bussing diagrams; make, location and capacity of installed equipment; mounting style; finish and panelboard nameplate inscription.
4. Furnish structural calculations for equipment anchorage as described in Section 26 00 10: Basic Electrical Requirements.
5. Submit Manufacturer's installation instructions.
6. Complete bill of material listing all components.
7. Warranty.

B. Dimensions and configurations of panelboards shall conform to the spaces allocated on the Drawings for their installation. The Contractor shall include with the submittal a layout of the electrical room if it differs from construction documents for review and approval by the Engineer prior to release of order.

1.04 OPERATION AND MAINTENANCE MANUAL

A. Supply operation and maintenance manuals in accordance with the requirements of Section 260010: Basic Electrical Requirements, to include the following:

1. A detailed explanation of the operation of the system.
2. Instructions for routine maintenance.
3. Pictorial parts list and parts number.
4. Telephone numbers for authorized parts and service distributors.
5. Final testing reports.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Panelboard components shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with NEMA PB1.1 and Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.07 WARRANTY

A. Units and components offered under this Section shall be covered by a ***1***-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

1.08 EXTRA MATERIAL

A. Turn over two (2) sets of panelboard keys to the Owner at completion of Project. All panelboards shall be keyed alike.

B. Provide one spray can of matching finish paint for touching up damaged surfaces after installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Square D.
2. ABB/ General Electric.
3. Eaton.
4. Siemens.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 PANELBOARDS - GENERAL

A. Enclosure:

1. Cabinets shall be NEMA Type 1 enclosure, door, and trim of code gauge galvanized steel. Provide NEMA Type 3R enclosures for exterior mounted panelboard.
2. Panelboard covers shall be door-in-door construction such that inner door exposes the overcurrent protective devices and the outer door exposes the complete panelboard interior (i.e. branch circuit conductors, lugs, neutral and ground bus, overcurrent protective devices, etc.). Outer door shall have full-length piano hinge and inner door shall have two-point hinges.
3. Provide combination spring catch and lock on inside edge of the inner door trims with flush fitting joint between door and trim. Locks on all panelboards shall be keyed alike. Doors 36 inches and over in height shall be provided with three-point catch and lock. Provide quarter-turn captive bolts on the outer door.

B. Bus assembly and terminations:

1. Bus shall be bolted copper with taps arranged for distributed phase connections to branch circuit devices
2. Cross connectors shall be copper, drilled and tapped for bolt-on device connections, arranged for double row placement of device and designed to permit removal or addition of overcurrent protection devices without disturbing adjacent devices or removing main bus connections.
3. Neutral bus shall be 100 percent rated of phase bus bars and shall have lugs for each outgoing branch circuit or feeder requiring a neutral connection unless otherwise noted.
4. Ground bus shall be full size with lugs for each outgoing branch circuit and feeder.

5. Refer to panelboard schedules on Drawings for bus rating. Bus rating shall match or be greater than main device or main lug rating.
6. As a minimum, bus bars shall be rated 10,000 AIC for 120/208volt panelboards and 14,000 AIC for 277/480volt panelboards. Unless otherwise noted.
7. Provide full sized bussing in all sections of multi-section panelboards.
8. Termination Lugs: Rated for use with aluminum/copper conductors.
9. All "SPACES" shall be ready for installation of future overcurrent protective device.

C. Miscellaneous requirements:

1. Circuit numbering: Starting at the top, indicate odd numbered circuits in sequence down the left-hand side and even numbered circuits down the right-hand side. Multi-section panelboards shall have continuous consecutive circuit numbers. Provide metal embossed circuit identification of panelboards.
2. Directories: A 6" x 8" minimum size circuit directory frame and card with clear plastic covering shall be provided inside the inner panelboard door to reflect conditions at completion of Work. Directory shall be typewritten denoting loads served by room number or area for each circuit.
3. Nameplates: Provide engraved nameplate for each panelboard. See Section 260533: Electrical Identification for requirements.

D. Refer to Panelboard Schedules for the following:

1. Mounting style; service voltage; terminal lug size, location, and quantity; bus ampacity; interrupting capacity of bus and breakers; quantity, poles and rating of overcurrent protective devices.

E. Overcurrent protective devices:

1. Refer to Section 26 28 16: Overcurrent Protection Devices.
2. Overcurrent protective devices shall be molded case circuit breakers.
3. Main devices shall be hard bus connected to the panelboard bus bars.
4. In all cases, panelboards fed directly from a transformer shall have a main overcurrent protective device. If not indicated on the Drawings or Panelboard Schedules, provide this device sized to provide the full capacity of the transformer rating.
5. Main devices shall be vertically mounted and shall have their operating handle in the up position when energized. Main devices that are mounted in the same manner as the branch devices are NOT acceptable, i.e. main devices shall be individually mounted at the top or bottom of the phase bus bars.
6. Panelboards overcurrent protective devices layout shall conform to the layout indicated on the panelboard schedules.
7. Provide identified handle ties for single pole circuit breakers that share a neutral conductor.

F. Surge Protective Devices:

1. Refer to Section 264313: Surge Protective Devices.

G. Finish: Five step zinc phosphate pre-treatment, one coat of rust inhibiting dichromate primer and one coat of baked-on enamel finish, ANSI 61 (light gray).

2.03 DISTRIBUTION PANELBOARDS

A. Enclosures shall be sized as required and shall meet the space restriction allocated on Drawings. Panelboard shall comply with NEMA PB 1.

B. Provide necessary hardware to permit locking every overcurrent protective device handle in the "OFF" position.

C. Where "SPACE" is indicated on panelboard schedules or Drawings, install cross connectors and mounting hardware to match the frame size ampere rated noted.

2.04 BRANCH CIRCUIT PANELBOARDS

A. Enclosure shall be 20" wide x 5-3/4" deep, surface or flush mounted and shall comply with NEMA PB 1.

B. Flush panelboards mounted adjacent to each other shall be same physical size.

C. Where "SPACE" is indicated on panelboard schedules or Drawings, install minimum 100amp branch circuit cross connectors and mounting hardware. For future device spaces larger than 100amps, cross connectors shall match the frame size ampere rated noted.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of panelboard installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

B. Where panelboards are shown to be flush mounted in walls, the contractor shall insure that 6” deep studs are employed in wall construction to accommodate the 5-3/4” deep panelboard enclosure.

3.02 INSTALLATION

A. Install panelboards in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Set panels plumb and symmetrical with building lines in conformance with PB1.1. Furnish and install all construction channel bolts, angles, etc., required to mount the equipment furnished under this Section.

C. Mounting height shall be 6 feet.

D. Panelboards shall be anchored and braced to withstand seismic forces as calculated per Section 260010: Basic Electrical Requirements.

E. Provide mounting hardware brackets, busbar drillings and filler pieces for all unused spaces.

F. "Train" interior wiring; bundle and clamp, using specified plastic wire wraps specified under Section 260519: Building Wire and Cable.

G. Replace panel pieces, doors or trim exhibiting dents, bends, warps, or poor fit that may impede ready access, security, or integrity.

H. Conduits terminating in concentric, eccentric, or oversized knockouts at panelboards shall have ground bushings and bonding jumpers installed interconnecting all such conduits and the panelboard.

I. Check and tighten all bolts and connections with a torque wrench using Manufacturer's recommended values.

J. Provide four 3/4" spare conduits stubbed-out of flush mounted panelboards to nearest accessible ceiling space.

K. Visually inspect panelboard for rust and corrosion. If signs of rust and corrosion are present, restore or replace panelboard to new condition.

L. In damp and wet locations, mount panelboards with a minimum one inch of air space between cabinet and the wall or other support material.

M. Provide close up plugs in all unused openings in the cabinet.

N. Field install handle ties on single pole circuit breakers that share a neutral conductor.

O. Circuit breakers feeding "Fire Alarm Control Panel(s)" shall be red in color.

3.03 FIELD QUALITY CONTROLS

A. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Testing Agencies objectives shall be to:

1. Assure panelboard installation conforms to specified requirements and operates within specified tolerances.

2. Field test and inspect to ensure operation in accordance with Manufacturer's recommendations and Specifications.

3. Prepare final test report including results, observations, failures, adjustments, and remedies.

4. Apply label on panelboards upon satisfactory completion of tests and results.

5. Verify ratings and settings and make final adjustments.

B. At least three weeks prior to any testing, notify the Engineer so that arrangement can be made for witnessing test, if deemed necessary. All pretesting shall have been tested satisfactorily prior to the Engineer's witnessed test.

C. The Contractor shall supply a suitable and stable source of electrical power to each test site. The Testing Agency shall specify the specific power requirements.

D. Testing of overcurrent protective devices shall be done only after all devices are installed and system is energized.

E. Prefunctional testing:

1. Provide Testing Agency with Contract Documents and Manufacturer instructions for installation and testing.

2. Visual and mechanical inspection:

a. Inspect for physical damage, defects alignment and fit.

b. Perform mechanical operational tests in accordance with Manufacturer's instructions.

c. Compare nameplate information and connections to Contract Documents.

d. Check tightness of all power connections.

e. Check that all covers, barriers, and doors are secure.

3. Electrical tests:

a. Insulation resistance: 1000volt DC tests for one minute on all 600volt and lower rated equipment, components, buses, feeder and branch circuits and control circuits. Test phase-to-phase and phase-to-ground circuits showing less than 10-megohms resistance to ground shall be repaired or replaced.

b. Circuit continuity: All feeders shall be tested for continuity. All neutrals shall be tested for improper grounds.

c. Ground resistance: Test resistance to ground of system and equipment ground connection.

d. Test overcurrent protection devices per Section 262816: Overcurrent Protective Devices.

F. In the event that the system fails to function properly during the testing as a result of inadequate pretesting or preparation. The Contractor shall bear all costs incurred by the necessity for retesting including test equipment, transportation, subsistence, and the Engineer's hourly rate.

G. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

H. Contractor shall submit the Testing Agency's final report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observation, deficiencies, and remedies. Test report shall be included in the operation and maintenance manuals.

3.04 CLEANING

A. Prior to energizing of panelboards, the Contractor shall thoroughly clean the interior of enclosure of all construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

B. Upon completion of Project prior to final acceptance the Contractor shall thoroughly clean both the interior and exterior of panelboards per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt, and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

END OF SECTION

SECTION 26 27 36

ENERGY INFORMATION SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Power monitoring equipment.
2. Web-based power monitoring communication system.
3. Data acquisition server "Gateway."
4. Miscellaneous monitoring systems.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. American National Standards Institute, Inc. (ANSI)/Institute of Electrical and Electronics Engineers (IEEE):

   ANSI/IEEE 802.3; Ethernet Standard.

2. American National Standards Institute, Inc. (ANSI):

   ANSI C12.20; For Electricity Meters – 0.2 and 0.5 Accuracy Classes.

   ANSI C37.90.1; Surge Withstand Capability (SWC) Test.

3. Federal Communications Commission (FCC) Regulations:

   FCC Part 15; Subpart B for Unintentional Radiators that Generate Radio Frequency Emissions. Class A for Digital Devices that Market use for Commercial applications.

4. Underwriters Laboratories, Inc. (UL):

   UL 61010A-1; General Safety Requirements for Electrical Equipment intended for Laboratory Use.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.

2. Describe product operation, equipment and dimensions and indicate features of each component.
3. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
4. Shop Drawings to include:
   a. Front, plan, and side view elevations with overall dimensions.
   b. Wiring diagrams showing all components and the connections between the components.
5. Furnish structural calculations for equipment anchorage as described in Section 260010: Basic Electrical Requirements.
6. Submit Manufacturer's installation instructions.
7. Complete bill of material listing all components.
8. Warranty.

B. Hardware and software description shall be provided in detail for all communications hardware, software, including sensor devices and gathering data to be transmitted over the network, and master display unit. This description will include a list of all the communicating devices to be connected to the network.

C. Typical software screen displays shall be provided in printout form and/or on disk.

1.04 OPERATION AND MAINTENANCE MANUAL

A. Supply operation and maintenance manuals in accordance with the requirements of Section 260010: Basic Electrical Requirements, to include the following:
   1. A detailed explanation of the operation of the system.
   2. Instructions for routine maintenance.
   3. Parts list and part numbers.
   4. Pictorial and schematic Electrical Drawings of wiring systems, including operating, hardware, flat screens, instrumentation, and annunciators.
   5. Telephone numbers for authorized parts and service distributors.
   6. Final testing reports.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Energy information system shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.07 WARRANTY

A. Units, components and programming offered under this Section shall be covered by a 1-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Power monitoring equipment:

a. Schneider/ Square D

b. Eaton:

c. Siemens

2. Web-based power monitoring communication system:

a. Schneider/ Square D

b. Eaton

c. Siemens

3. Data acquisition server gateway:

a. Obvius A8812-1 “AcquiSuite” Data Acquisition Server

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 MICORPROCESSOR-BASED POWER MONITORING EQUIPMENT

A. Integrated multi-point metering/switchboard construction:

1. Combines switchboard design with multi-point metering (MPM) equipment to provide a complete factory installed metering switchboard consisting of distribution switchboard with overcurrent protection devices, meter module(s) and current sensors, factory installed and wired to meters.

2. The MPM shall monitor 60 single-pole loads, 30 two pole loads or 20 three-pole loads or any combination thereof by use of current sensors.

3. All connections to the MPM shall be through removable plugs.

4. The MPM shall be capable of accepting input from current sensors by connecting with factory installed plug connectors.

5. The MPM shall be capable of automatically sensing the current rating of the current sensor.
6. The MPM shall provide a mechanism for detecting tampering with the current sensors. Tamper detection shall be accessible remotely by the headend computer.
7. The MPM shall be available in one of three voltage ratings:
    a. 120/208volt AC
    b. 277/480volt AC
    c. 347/600volt AC
8. The MPM shall calculate power and energy consumption in accordance with ANSI C12.20 metering specification and stored in non-volatile memory for forwarding to an intelligent system.
9. The MPM shall store power in kW and energy in kWh for each metering point.
10. The MPM shall store energy profile information for each metering point in non-volatile memory. The profile time-period shall be adjustable from 1 to 60-minutes. The MPM shall be able to save a minimum of 365-days of energy profile data for all 60-meter points on a 15-minutes basis.
11. The MPM shall be suitable for mounting within a panelboard or switchboard utilizing a dedicated mounting bracket. The MPM shall have all connections oriented towards the wiring gutters of the panelboard or switchboard in which it is mounted. The MPM may also be mounted in a separate enclosure.
12. The MPM shall have LEDs that can be easily viewed when the unit is installed to aid in the installation and operation of the device with the following functionality as a minimum:
    a. Each current input shall have an LED that shall flash in proportion to the amount of power flowing in the measures circuit.
    b. An indication LED that flashes to indicate when the MPM is functioning properly.
    c. A transmit LED that indicates when the MPM is transmitting data on the communication network.
    d. A receive LED that indicates when the MPM is receiving data on the communication network.
13. The MPM shall have rotary address switches that are easily accessible and set the unit address on the communication network.
14. The local device network shall be factory interconnected utilizing two Modbus RTU ports. The communication speed at the device level shall be a minimum of 9,600-baud. Devices shall communicate at their maximum baud rate regardless of the number of devices on the network.
15. MPM shall be networkable such that a single modem can be utilized to read multiple meters.
16. Current sensors shall be provided with a toroidal winding over solid core. The winding shall be mounted over the circuit to be monitored by inserting the load conductor through a hole in the center of the current transformers. The current in the load conductor shall be made available to an electronic monitoring device through a four-conductor cable and terminated to a removable plug on the current sensor. The current sensor shall have two LEDs, one red for indicating loss of connection and one blue for verification to connected load. The current sensors shall be

suitable for use with circuits rated 125amp through 400amp. Extension cables, with a length of 8 and 16-feet and factory installed connectors shall be available for installations where the standard cable is too short for proper installation. The current sensors shall have 600volt rated cable insulation and shall be UL listed with the MPM.

2.03 WEB-BASED POWER MONITORING COMMUNICATION SYSTEM

A. General: Furnish and install a complete web-based power monitoring communications system (PMCS) as detailed on the drawings and as described herein. The PMCS shall include all remote devices for metering, monitoring, control and protection, a network time server, all Ethernet communications gateways and gateway interfaces, intercommunication wiring, and ancillary equipment.

B. Web-based PMCS:

1. The PMCS shall provide a web browser-based monitoring and management system for all communicating devices in the power system.

2. The PMCS shall communicate to all devices over an industry standard Ethernet communication backbone. For devices that cannot communicate directly on Ethernet, a gateway complying with the requirements of this specification can be provided.

3. The PMCS shall provide a real time, web-based system to allow the user to easily view the key operational characteristics of the system. These features of the system shall not require any custom screen development or configuration to provide the following functions:

a. The PMCS shall provide the ability to view the current value of all operational variables available from all supported devices connected to the Ethernet network without the need for any additional system software.

b. The PMCS shall not require specific knowledge of a device to be able to display information from that device. Instead, the software shall have the ability to query the device for its operational capabilities and automatically set up web-based pages to display the information. No custom screen development shall be required to display data from any device able to connect to the system:

1) The software shall support the ability to automatically establish a connection to any device added to a gateway without the user doing any configuration in the software.

c. The PMCS shall automatically build a one-line network hierarchy for all connected devices so the user can easily view them and display the corresponding data, status for those devices.

4. The PMCS shall provide the ability trend one or more variables (volts, amps, kW, kWh, etc.) from one or more devices on a web-based trend graph. The trend viewer shall support the following features:

a. Web accessible trending tool.

b. Option to display all variables on a single chart.

c. Support for Min and Max value generation and graphing.

d. Ability to select trend date ranges from a calendar.

e. Ability to save the selected trend data to a CSV file using the web interface

5. The PMCS shall provide an energy graph on the home page and shall include:

a. Ability to show either demand or usage.
b. Ability to show the peak value for selected time periods and load factor.
c. Compare energy usage across devices.
d. Display peak periods for each device.
e. Ability to display line, bar, stacked bar, and cumulative usage for each selected period.
f. Move cursor to view energy values at any given time.
g. Calendar based date and time selection.

6. The PMCS shall support displaying of the waveform data collected by the power monitoring devices that can capture waveforms. The graphic format will display the data in an oscilligraphic format and in a Fourier Amplitude Spectrum graph.
7. The PMCS shall provide time stamped sequential order of events for trips, analog alarms, motor start profiles, and operator actions based on the information received from the actual devices.
8. The PMCS shall have the ability to manage alarm and event conditions detected by the devices. Alarm management shall include:
   a. Ability to acknowledge alarms via the web interface.
   b. Ability to flag priority alarms.
   c. Ability to export alarms.
   d. Ability to sort and analyze alarms by time, device, or priority.
9. The PMCS shall provide web-based navigation system to easily:
   a. Drill down” in the one-line hierarchy.
   b. Upload any .jpeg or, png file as a one-line background.
10. The PMCS shall be easy to operate and manage and shall include:
    a. Ability to have a favorite’s list of devices.
    b. Ability to add and remove devices from the favorites list.
    c. Ability to see devices current status and key parameters at a glance.
    d. Ability to navigate to main software views with a single mouse click.
11. The PMCS shall be scalable such that the system can be expanded without requiring the user to reconfigure a new system.
12. The PMCS shall be sized to support the number of devices shown on the drawings, plus the capacity to accommodate 10% additional devices.
13. The PMCS shall not restrict the number of simultaneous users except based on the computing resources provided to support the system.
14. The PMCS shall allow users to be granted privileges based on their user ID and password, to perform various functions in the system. The software shall support, at a minimum 2 levels of access with one supporting Read only access and the other provide full Administration access.

15. The PMCS shall provide onboard embedded memory that is not external to the system or resident on a separate computer.

C. Web-Enabled PMCS Hardware Components:

1. All web enabled devices in the PMCS shall provide any authorized user on the customer's network access to the critical data listed below with the user requiring only a supported Internet browser on their own computer.

   a. Meter Screen providing:

      1) Volts: L-L and L-N, and average.

      2) Frequency.

      3) Current and average phase A, B, and C, N and G.

   b. Power Screen providing:

      1) Energy.

      2) Demand.

      3) Power Factor.

   c. Quality Screen providing:

      1) Total Harmonic Distortion (THD) of volts and current.

   d. Events screen providing:

      1) Latest events.

      2) Enabled Triggers.

      3) Historical Events.

2. The web-enabled power monitoring hardware shall support multiple protocols over Ethernet to ensure the system can easily be integrated into the PCMS software system as well as existing systems. These protocols shall include:

   a. Modbus TCP/IP.

   b. BACnet/IP.

   c. SNMP.

   d. HTTP.

   e. SMTP.

   f. NTP.

   g. File System for exporting .CSV trend files.

3. The web enabled power monitoring hardware shall provide support for configuration of all web enabled meters and gateways directly via the web pages on the device.

   a. To support the configuration of legacy devices on the device networks connected to the gateway, the gateway shall support a "pass through mode" to allow the legacy configuration software to connect from any computer on the users network to the device via the gateway.

4. All web enabled power monitoring hardware that is connected directly to Ethernet shall support the ability to synchronize their time clock using Network Time Protocol (NTP). The purpose for this support is to ensure all device clocks are accurate so that event sequences can be adequately analyzed.
    a. For devices that support clock synchronization and are on the device networks connected to the gateways, they shall support the ability to sync their clock to the clock in the gateway.
5. Ethernet Switches:
    a. A single web access point: 4 or 6-port Ethernet switch shall be provided in the equipment to allow a single access point for the user and the ability to connect more than one network device directly on the customer's Ethernet Local Area Network (LAN).
    b. Ethernet switch shall support standard copper RJ45 connectors and/or 100BaseFX Fiber-Optic via ST connectors.

2.04 DATA ACQUISITION SERVER GATEWAY

A. General:
1. The data acquisition server allows users to connect and secure data from virtually any meter type and convert the raw meter output into usable information. This information can be integrated with almost any level of software system or database, from an enterprise software suite to a simple Excel spreadsheet.
2. The data acquisition server is scalable for energy monitoring applications, including the ability to access and configure devices through ant web browser.
3. The data acquisition server employs "plug & play" technology, and automatically detects and configures downstream Modbus devices in seconds. Data from downstream devices are time stamped and stored in non-volatile memory at user-selected intervals. The data can be stored or uploaded to a destination of user's choice through a number of different formats. Data can also be accessed through any web browser via integrated modem or Ethernet connection.
4. Using the built-in modem or Ethernet port, data is sent via either the network or phone lines to the online server system. From the Online website, you can view past data, plot charts, and export data.
5. User cab push/pull data into energy kiosk or dashboard, custom software applications, or any web interface.

B. Equipment description:
1. The data acquisition server unit shall be a standalone, wall-mounted device powered by a 120volt AC plug-in transformer with 24volt DC output.
2. The unit shall accept up to 32 Modbus device inputs on the RS485 serial input terminals. The unit shall provide automatic recognition and configuration for Modbus power meters as well as other Modbus devices.
3. The unit shall provide user interface via standard web browser using an integrated Ethernet RJ45 jack.
4. Unit shall provide alarm setpoints for all measured values including the option for either high/low or warning/alarm.

5. Unit shall be capable of using LAN connections (static IP or DHCP), telephone modem or cell modem (GSM) for data upload.
6. Unit shall provide data in standard delimited text form (.txt). There shall be an option for retrieving data using XML. Data uploads shall be either push or pull at the option of the user, on user-selected intervals.
7. Store all recorded variables in non-volatile memory.
8. The unit shall function as a gateway device, using Modbus TCP to retrieve specific data from connected devices as required.
9. Performance characteristics:
    a. Main processor: ARM 9
    b. I/O Co-processor: ARM 7
    c. Operating system: Linux 2.6
    d. Flash ROM: 16MB NOR Flash (expandable with USB memory device)
    e. Memory: 32MB RAM
    f. LED: 8x pulse input, 4 modem activity, Modbus TX/RX, power status
    g. Console: 2x 16 LCD character, two buttons
    h. LAN: 10/100, Auto crossover detection
    i. Modem (phone): V.34bis, 33,600bps
    j. Modem (cellular): GSM/GPRS Class 10, 85kbps
    k. Protocols: Modbus/RTU. Modbus/TCP, TCP/IP, PPP, HTTP/HTML, FTP, SNMP, SMTP, XML
    l. Power supply: 24volt DC, transformer included
    m. Power requirement: 120volt AC
    n. Serial port: RS485 Modbus
    o. USB port: USB memory expansion port
    p. Interval recording: User selectable 1 to 60-minutes. Default of 15-minute interval
    q. Outputs: 2x, Dry contact 30volt DC, 150mA max
    r. The unit shall accept up to 8 inputs directly. Each input shall be capable of being configured for the following:
        1) 0-10volts: Min/Max/Ave/Instantaneous
        2) 4-20mA: Min/Max/Ave/Instantaneous
        3) Pulse: Consumption, rate.
        4) Resistance: Min/Max/Ave/Instantaneous
        5) Runtime: Runtime, status

2.05 MISCELLANEOUS MONITORING SYSTEMS

A. The meters that follow are all to be furnished under another Division of Work but require connection under this Division to the energy information system network. Coordinate the exact location of these meters with HVAC, plumbing and landscape irrigation contractors prior to commencing installation.

B. Meters provided by others shall have a Modbus TCP/IP protocol to be supported on the energy information system network. The exception being the water flow meters and the natural gas flow meters, which shall be the pulse output type meters with dry contacts. The data acquisition server can support direct connections with both the Modbus meters and the pulse output meters.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of metering equipment installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Install energy information system components in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Tighten electrical connectors and terminals; including screws and bolts, in accordance with equipment Manufacturers published instructions.

C. Coordinate the software installation after all hardware has been completely installed, connected, and activated.

3.03 PROGRAMMING

A. The contractor shall insure the on-site programming of the system by a manufacturer’s representative, as well as to assist in the system startup. On-site services shall include:

1. Setting all the addresses of all devices in the equipment.
2. Verifying and troubleshooting the integrity of the data.
3. Assisting the Owner in correcting any data line problems.
4. Coordinating any possible warranty problems.
5. Configure the software to match the field devices.

3.04 FIELD QUALITY CONTROL

A. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Testing Agencies objectives shall be to:

1. Assure energy information system equipment installation conforms to specified requirements and operates within specified tolerances.
2. Field test and inspect to insure operation in accordance with Manufacturer's recommendations and Specifications.
3. Prepare final test report including results, observations, failures, adjustments, and remedies.
4. Verify settings and make final adjustments.

B. At least three weeks prior to any testing, notify the Engineer so that arrangement can be made for witnessing test, if deemed necessary. All pretesting shall have been tested satisfactorily prior to the Engineer's witnessed test.

C. The Contractor shall supply a suitable and stable source of electrical power to each test site. The Testing Agency shall specify the specific power requirements.

D. Testing of energy information system equipment shall be done only after all devices are installed and system is energized.

E. Prefunctional testing:

1. Provide Testing Agency with Contract Documents and Manufacturer instructions for installation and testing.

2. Visual and mechanical inspection:

a. Inspect for physical damage, defects alignment and fit.

b. Verify the meters are functional by scrolling through monitoring options.

c. Compare nameplate information and connections to Contract Documents.

d. Check tightness of all control and power connections.

e. Check that all covers, barriers, and doors are secure.

3. Electrical tests:

a. Provide a portable meter that was calibrated prior to test, on the same day as test, and with an accuracy equivalent to that of the meters being tested.

b. Confirm values of each meter in the system by hooking up portable meter to feeder being monitored. Ensure that there is a minimum of 5% load on feeder at time of test, based on the overcurrent protection size.

c. Calibrate meters as required based on reading from portable meter.

F. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

G. Contractor shall submit the Testing Agency's final report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observation, deficiencies, and remedies. Test report shall be included in the operation and maintenance manuals.

3.05 CLEANING

A. Upon completion of Project prior to final acceptance the Contractor shall thoroughly clean energy information system equipment per Manufacturer's approved methods and materials.

3.06 TRAINING

A. Factory authorized service representative shall conduct a 4-hour training seminar for Owner's Representatives upon completion and acceptance of system. Instructions shall include operation, maintenance, and testing of equipment with both classroom training and hands-on instruction.

B. Contractor shall schedule training with a minimum of 7-days advance notice.

END OF SECTION

SECTION 27 00 00

COMMUNICATIONS BASIC REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the common administration basic requirements and common methods for all low voltage systems installation work included under Division 27 and 28 (and other Divisions). Where those requirements differ from the requirements of this section, the more stringent shall govern.

1.02 STANDARDS, REGULATIONS, AND CODES REFERENCES

A. The following Standards, Regulations and Codes apply to work specified in the Contract Documents.

1. Applicable State and Local Codes.
2. California Building Code and California Electrical Code, Current Editions.
3. BICSI TDMM (Telecommunications Distribution Methods Manual), 11th Edition 2006.
4. ANSI/TIA/EIA-568-B.1. Commercial Building Telecommunications Cabling Standard,
5. ANSI/TIA/EIA-568-B.1-2. Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements, Addendum 2, Grounding and Bonding Specifications for Screened Balanced Twisted-Pair Horizontal Cabling.
6. ANSI/TIA/EIA-568-B.1-3. Commercial Building Telecommunications Cabling Standard.
7. ANSI/TIA/EIA-568-B.1-4. Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements, Addendum 4, Recognition of Category 6 and Category Cat 6A and 50 nm Laser-Optimized 50/125 um Multimode Optical Fiber Cabling.
8. ANSI/TIA/EIA-568-B.1-2. Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components.
9. ANSI/TIA/EIA-568-B.2-1. Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components, Addendum 1, Transmission Performance Specifications for 4-Pair 100 Ohm Category 6 Cabling.
10. ANSI/TIA/EIA-568-B.2-10 (draft 2.0). Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components, Addendum 10, Transmission Performance Specifications for 4-Pair 100 Ohm Augmented Category 6 Cabling.
11. ANSI/TIA/EIA-568-B3.3 Optical Fiber Cabling Components Standard.
12. TIA-569-B. Commercial Building Standard for Telecommunications Pathways and Spaces.
13. ANSI/TIA/EIA-606-A. Administration Standard for Commercial Telecommunications Infrastructure.
14. ANSI/TIA/EIA-607-A. Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
15. TIA/EIA TSB-67 Transmission Performance Specifications for Field Testing of Unshielded Twisted-Pair Cabling Systems.
16. TIA/EIA TSB-72 Centralized Optical Fiber Cabling Guidelines.

1.03 DEFINITIONS

A. The following is a list of abbreviations generally used in Divisions 27 & 28:

1. ADA - Americans with Disabilities Act
2. AHJ - Authority Having Jurisdiction
3. ANSI - American National Standards Institute
4. APWA - American Public Works Association
5. ASTM - American Society for Testing and Materials
6. CBC - California Building Code
7. CEC - California Electrical Code
8. CFC - California Fire Code
9. FCC - Federal Communications Commission
10. HVAC - Heating, Ventilating and Air Conditioning
11. IEC - International Electro-technical Commission
12. IEEE - Institute of Electrical and Electronics Engineers.
13. IETA - International Electrical Testing Association
14. FM - FM Global
15. NEMA - National Electrical Manufacturers Association
16. NFPA - National Fire Protection Association
17. OSHA - Occupational Safety and Health Administration
18. UL - Underwriters Laboratories Inc.

B. Provide: To furnish and install, complete and ready for the intended use.

C. Furnish: Supply and deliver to the project site, ready for unpacking, assembly, and installation.

D. Install: Includes unloading, unpacking, assembling, erecting, installing, applying, finishing, protecting, cleaning, and similar operations at the project site to complete items of work furnished by others.

E. Following is a list of commonly used terms:

1. Active Equipment: Electronic equipment used to develop various WAN and LAN services.
2. Backbone: A collective term sometimes used to describe the campus and vertical distribution subsystem facilities and media interconnecting service entrances, communications rooms, and communications cabinets.
3. Bonding: Permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to safely conduct currents likely to be imposed on it.
4. Cabinet: Wall-mounted modular enclosure designed to house and protect electronic equipment.
5. Cable Tray: Vertical or horizontal open supports, usually made of aluminum or steel, that are fastened to a building ceiling or wall. Cables are laid in and fastened to the trays. A cable tray is not a raceway.

6. Campus: Grounds and buildings of a multi-building premises environment.
7. Channel: The end-to-end transmission path between two points at which application specific equipment is connected; may include one or more links, cross-connect jumper and/or patch cords, and work area station cords. Does not include connections to active equipment.
8. Cross-Connect: Equipment used to terminate and tie together communications circuits.
9. Cross-Connect Jumper: A cluster of twisted-pair conductors without connectors used to establish a circuit by linking two cross-connect termination points.
10. District Representative: Persons employed directly by the District (Staff), personnel of a third-party Construction Management firm that is contracted by the District, and/or personnel of a third-party Consulting firm that is contracted by the District.
11. Fiber Optic Distribution Unit (FDU): Cabinet with terminating equipment used to develop fiber optic cross-connect facilities. Also known as LIU.
12. Grounding: a conducting connection to earth, or to some conducting body that serves in place of earth.
13. Hinged Cover Enclosure: Wall-mounted box with a hinged cover that is used to house and protect electrical devices.
14. Horizontal: Pathway facilities and media connecting the MDF or IDF to Telecommunications Outlets.
15. Intermediate Distribution Frame (IDF): Data networking equipment rack and/or location that serves an individual area, floor or building. Downstream from the MDF.
16. Jack: Receptacle used in conjunction with a plug to make electrical contact between communications circuits, e.g., eight-position/eight-contact modular jacks.
17. Link: A transmission path between two points, not including terminal equipment, work area cables, and equipment cables; one continuous section of conductors or fiber, including the connecting hardware at each end.
18. Local Area Network (LAN): Data transmission facility connecting several communicating devices, typically Ethernet and the network is limited to a single campus.
19. Main Distribution Frame (MDF): Initial (main) data network equipment rack and/or location. Only one MDF occurs per site and may serve many downstream IDFs.
20. Media: The type of cable (e.g., twisted-pair, coaxial, or fiber optic) used to provide signal transmission paths.
21. Minimum Point of Entry (MPOE): The location where the service provider hands off connection and responsibility for service to on-premise customer owned equipment.
22. Modular plug: An eight-position, eight-conductor end-of-wire electrical connector used with Category rated cable.
23. Passive Equipment: Non-electronic hardware and apparatus, e.g., equipment racks, cable trays, electrical protection, wiring blocks, FDUs, etc.
24. Patch Cord: A length of copper or fiber cable with connectors on both ends used to join communications circuits at MDF/IDF and end stations.
25. Patch Panel: System of terminal blocks or connectors used with patch cords that facilitate the administration of cross-connect fields.
26. Pathway: Facility for the placement of communications cable. A pathway facility can be composed of several components including conduit, wireway, cable tray, surface raceway, underfloor systems, raised floor, ceiling support wires, etc.
27. Protectors: Electrical protection devices used to limit foreign voltages on metallic communications circuits.

28. Raceway: An enclosed channel designed expressly for holding wires or cables; may either conductive metal or insulating plastic. The term includes conduit, tubing, wireway, underfloor raceway, and surface raceway; does not include cable tray.
29. Rack: An open or enclosed structure, typically made of aluminum or steel, used to mount equipment; usually referred to as an equipment rack. Maybe freestanding and floor mounted or a wall mounted cabinet. Industry standard 19” width spacing.
30. Wiring Block: Punch down terminating equipment used to develop twisted pair cross-connect facilities.

1.04 PRODUCT AVAILABILITY

A. Products with long delivery lead times are to be brought to the attention of the District’s representative.

1.05 PRODUCT SUBMITTALS

A. See Division 01 Submittals for more requirements

1.06 SUBSTITUTION LIMITATIONS

A. Equivalent product(s) may be considered for substitution for those products specified, however, the equivalent product(s) must be approved, and show demonstrated and documented equivalence to the product(s) specified. Documentation includes, but is not limited to, product samples, data sheets, and actual test data. The request for product substitution, and supporting documentation, must be submitted to the District’s representative in writing.

B. See Division 01 Substitutions for more requirements

1.07 QUALITY ASSURANCE

A. The Contractor is to conform to requirements of the latest adopted version of the CEC with amendments by local AHJs.

B. The Contractor is to conform to the latest adopted version of the CBC with amendments by local AHJs.

C. The Contractor is to obtain and pay for electrical permits, plan review, and inspections from local AHJs.

D. The Contractor is to furnish products listed by UL or other testing firm acceptable to AHJ.

E. The Contractor is to conform to requirements of the Service Providers (i.e., electric, telephone, broadband and cable television).

F. Contractor Qualifications:

1. The Contractor shall have a minimum of five years' direct experience with the product they are installing. Installation technicians shall be certified and with a minimum of three years' direct experience with the product they are installing.
2. The Contractor shall maintain a local (within 50 miles of District) service facility which stocks spare devices and/or components for servicing systems.
3. The Contractor shall have performed successful installation of at least three projects similar in scope and size. The Contractor must be able to provide project references for these three projects, including scope of work, project type, owner/user contact name and telephone number.
4. For sections requiring installation personnel to be certified by the manufacturer, the Contractor selected for this project shall provide current certificates for all technicians working on the project.
5. The Contractor shall hold and maintain a valid California C-7 or C-10 State Contractors License and can exhibit validity upon request.
6. The Contractor shall provide a list of test equipment proposed for use in verifying the installed integrity of systems installed.
7. The Contractor shall provide the resume for the Contractor's Project Manager and on-site Installation Supervisor who will be assigned to this project.
8. The Contractor shall provide a list of technical product training attended by the contractor's personnel that will install the specified manufacturer system.
9. The Contractor shall provide a list of Sub-Contractor(s) who will assist the Contractor in the performance of this work.

1.08 SEQUENCING AND SCHEDULING

A. For the proper execution of the work, the Contractor shall cooperate with other tradecrafts and contracts as needed.

B. To avoid installation and scheduling conflicts, the Contractor shall thoroughly examine the complete set of Contract Documents and resolve any conflicts the District's representative prior to installation.

1.09 SHOP DRAWINGS

A. Shop Drawings: When required by individual Specification Sections, the Contractor shall provide shop drawings which include physical characteristics, electrical characteristics, device layout plans, point-to-point wiring diagrams for all connections, and the like. Refer to individual Specification Sections for additional requirements for the shop drawings.

1.10 WARRANTY

A. The Contractor shall provide an extended manufacturer's warranty on the Backbone and Horizontal Communications systems as specified in other sections of Division 27.

1.11 CLOSE OUT DOCUMENTS

A. The Contractor shall provide final coordination drawings, with as-built information added, which are to be submitted as record drawings at completion of project.

B. Red-Line Drawings. The Contractor shall provide a clean set of Construction Drawings marked in red with the following:

1. All installation changes and deviations from the Construction Drawings (including all Addendums and change order documents).
2. All exact routes of installed pathways (sleeves, conduit, surface raceway, etc.).
3. Exact location of racks, cabinets, control panels, and the like.

C. Operation and Maintenance Documentation: The Contractor shall provide copies of certificates of code authority acceptance (i.e. Fire Alarm IOR), product data, guarantees, warranties, installation guides, maintenance guides and the like.

D. Inspection and/or testing: The Contractor shall submit testing reports for testing that was required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The Contractor shall provide like items from one manufacturer, such as wire/cable, jacks, modular plugs, patch panels, equipment connection cords, wall plates, and the like. See individual sections for detailed information.

2.02 MATERIALS

A. The Contractor shall provide new materials of the type and quality detailed, listed by UL, bearing their label wherever standards have been established. Indicated brand names and catalog numbers are used to establish standards of performance and quality.

B. The Contractor shall provide material and equipment that is acceptable to AHJ as suitable for the use indicated. For example, provide plenum rated cables in ceilings that are utilized as air return plenums.

C. The Contractor is responsible for a complete and operable system and shall provide all incidental materials and accessories not specifically mentioned herein or noted on Drawings but needed for a complete and operable system, that is satisfactory to the District.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Construction Documents:

The Construction Drawings are diagrammatic with symbols representing Division 27/28 equipment, outlets, accessories, wiring etc.

2. The Contractor shall examine the entire set of Construction Drawings to avoid conflicts with other systems. The Contractor shall determine the exact route and installation of wiring and equipment and coordinate with other trades and/or construction conditions.

3.02 INSTALLATION

A. The Contractor shall install Division 27/28 equipment completely as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer prior to rough-in of the equipment and examine the instructions thoroughly. When requirements of the installation instructions conflict with the Contract Documents, request clarification from the District's representative prior to proceeding with the installation.

B. The Contractor shall not install equipment and/or wiring in obvious passages, doorways, scuttles, or crawl spaces, which would impede or block the passage's intended usage.

C. The Contractor shall not install equipment in locations where it would obviously be subject to damage during normal use.

3.03 FIELD QUALITY CONTROL

A. Tests: The Contractor shall conduct tests of equipment and systems to demonstrate compliance with requirements specified in Division 27/28. Refer to individual Specification Sections for required tests. Testing documentation is to be included in Closeout Documents.

3.04 CLEANING

A. The Contractor shall remove all dirt and debris caused by the execution of the work in all cabinets, surfaces and floors.

B. The Contractor shall leave the entire Division 27/28 systems installed under this Contract in a clean, dust-free, and proper working order.

C. The Contractor shall clean interiors of new and modified equipment enclosures.

END OF SECTION

SECTION 27 05 00

COMMON WORK RESULTS FOR COMMUNICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies the basic materials and methods for all low voltage pathways installation work included under Division 27 and 28. Where those requirements differ from the requirements of this section, the more stringent shall govern.

B. This section adds refinements to Division 26 that apply to Division 27/28 communications and low-voltage systems.

1.02 SCOPE

A. Materials and/or methods for the following.

1. Communication services
2. Grounding
3. Fasteners
4. Hangers and supports
5. Conduits/Backboxes/Raceways
6. Underground
7. Sleeves and penetrations

1.03 SUBMITTALS

A. Submittals shall be made in accordance with District submittal procedures, see Division 01 Submittals for requirements.

1.04 RELATED REQUIREMENTS

A. Division 07 – Thermal and Moisture Protection

B. Section 09 91 00 - Painting

C. Division 26 – Electrical

D. 27 00 00 – Communications Basic Requirements

1.05 REFERENCES

A. ANSI American Nation Standards Institute

B. NFPA 70 – National Electrical Code

C. UL Underwriters Laboratory

D. California Building Code (CBC)

E. California Electrical Code (CEC)

1.06 WARRANTY

A. Refer to Division 01 -– Warranties

PART 2 – PRODUCTS

2.01 All products used on this project shall bear the label of- and be approved by Underwriters Laboratories unless otherwise approved in writing by the District's representative. See Appendix A for pre-approved materials.

2.02 GROUNDING BUS BAR

A. Copper bus bar 2"x10"x1/4" minimum size with stand-off brackets and insulators, pre-drilled and threaded mounting holes (hole qty. 12 or greater) for equipment grounding lug attachment. Approved Manufacturer is Chatsworth Products.

2.03 FASTENERS

A. Mounting hardware and anchors recommended by the manufacturer of any material that shall be mounted to the building or structure.

1. Sheet rock / drywall / wall board: Easy Anchor, toggle bolt, other spread type anchor with load distribution, or approved equivalent.
2. Concrete / cinder block / solid masonry: Expanding compression type lag, expanding compression type bolt, expanding compression type, all-thread with nuts, or approved equivalent.
3. Tile / Stucco / hollow masonry: Toggle bolts or approved equivalent.
4. Wood: Lag screws, wood screws, or approved equivalent.
5. Metal: Beam clamps, sheet metal screws, self-drilling screws or approved equivalent.

2.04 CABLE HANGERS AND SUPPORT

A. D-Rings

1. Commercial grade

B. J-Hooks (For bundles of 24 cables or less)

1. Commercial grade (See Appendix A)
2. Colored coded by system:
   a. No color = Data
   b. Orange = Fiber optic cables and service provider feeders
   c. Blue = CCTV, Electronic Access Control, and Intrusion
   d. Yellow = Audio-Visual (non-data)
   e. Green = EMS and lighting controls
   f. Red = Fire Alarm

2.04 SURFACE RACEWAY

A. The District has standardized the use of Wiremold 800, 2300, 5400 and 5500 series for non-metallic surface raceway.

2.05 CONDUITS AND ACCESSORIES

A. CONDUITS

1. See Division 26 for additional requirements.
2. For new construction, exposed Fire Alarm pathways to be in red painted conduit.
3. All new conduits shall be sized accordingly to achieve a 40% maximum fill ratio with initial cables installed.
4. Underground conduits shall be Schedule 40 PVC.

B. INNERDUCT

1. Orange corrugated HDPE (High Density Polyethylene) Innerduct shall be used for fiber optic cable protection in interior locations.
2. Fabric multi-cell innerduct is approved for underground conduits 2” and larger.

C. FITTINGS:

1. See Division 26 for additional requirements.
2. Commercial grade.
3. Compression type.
4. Conduit bodies and any other sharp bend fittings are <u>strictly prohibited for communication Cat6A and fiber optic cables.</u> Appropriate conduit sweeps are required.

B. PULL LINE

1. Minimum 1/8" diameter or larger braided line of polypropylene or continuous fiber polyolefin. The minimum breaking strength of 1/8 in. line is 200 lbs.

C. SLEEVES

1. All conduit sleeves shall be of sufficient quantity and size to achieve a 40% maximum fill ratio with initial cables installed.
2. Penetrations through rated assemblies to use EZ-Path or an approved equal.

2.06 CABLE TRAYS

A. Cable trays (For cable bundles of 25 or more)

B. For above ceilings wire basket cable trays are approved and an approved manufacturer is SnakeTray.

C. For exposed areas, solid cable trays are required and an approved manufacturer is MonoSystems.

2.07 BACKBOXES AND JUNCTION BOXES

A. Galvanized one-piece or welded pressed steel type. Boxes for fixtures shall not be less than 4” square and shall be equipped with fixture stud. Boxes shall be at least 2-1/8” deep, 4” square for 1 or 2 gang devices, with device rings. Boxes mounted in wall or ceiling finished with 5/8” gypsum board shall be furnished with 5/8” deep device rings. Provide blank cover for all boxes without fixture or device. 4 11/16 and/or 5” square back boxes may be required for larger cable requirements.

B. Junction boxes, larger than 8”, located indoors shall be hinged, NEMA-1 rated.

C. Junction boxes, larger than 8”, located outdoors, or in wet or damp locations shall be hinged, NEMA-3R.

D. Provide and install tamper-proof screws for all exterior box lids.

E. Junction boxes used for Fire Alarm systems are to be red in color with red colored cover plates.

2.08 GROUND BOXES

A. See Division 26 and below for additional requirements.

B. Approved manufactures are Jensen, Christy or approved equivalent.

C. All ground boxes shall have metal traffic-rated lids with permanent factory markings

Division 27/28 Ground Boxes

Item	MFG1	MFG1 P/N	MFG2	MFG2 P/N	Access Control	DIV 27/28 Pathway	Comcast	AT&T	Lid Label
10” Round Ground Box Traffic Rated Bolt Down Lid	Jensen	HTV10-5	Christy	G05	A				None
10”x17” Rectangular Ground Box Traffic Rated Metal Lid	Jensen	HT1017	Christy	B1017		B			Comm
17”x30” Rectangular Ground Box Traffic Rated Metal Lid	Jensen	HT1730	Christy	B1730		C	1	1	Comm
24”x36” Rectangular Ground Box Traffic Rated Metal Lid	Jensen	HT2436	Christy	B2436		D	2		Comm
24”x36” Rectangular Ground Box Traffic Rated AT&T	Jensen	100010927						3	AT&T
Notes:									
A – At Access Controlled Gates Requiring 2 or 3 Post Connections									
B – For Special LV Pathway Max Conduits: 2 – 1” From 3 Sides (6 Total)									
C – For LV Backbone Pathway Max Conduits: 4 – 2” From 2 Sides (8 Total)									
D – For LV Backbone Pathway Max Conduits: 4 – 2” From 3 Sides (12 Total)									
1 – 17”x30” Acceptable for Service Feed (Comcast/AT&T) Midspan Pull Box									
2 – 24”x36” Acceptable for Comcast Service Entrance Splice Box									
3 – 24”x36” Acceptable for AT&T Service Entrance Splice Box									

2.09 PENETRATION SEALING

A. Firestopping: Provide UL Listed firestopping materials for all penetrations through rated assemblies (walls / floors). See Division 07 for more information. Approved manufacturers are Hilti and Specified Technologies Inc.

B. Draft stopping: Use foam sealant around conduit penetrations (in non-rated assemblies) to prevent passage of air, smoke, and/or toxic gas. See Division 07 for more information.

C. Weatherproofing: Use weatherproof sealant around conduit penetrations in exterior walls to prevent the intrusion of water. See Division 07 for more information.

PART 3 – EXECUTION

3.01 COMMUNICATION SERVICES

A. Install inground boxes, conduits, and terminal cabinets according to the service provider requirements.

3.02 GROUNDING

A. Ground fittings shall be UL approved for each application and installed and/or connected to system in accordance with current CEC Code requirements.

B. See Division 26 for additional requirements.

C. Install one grounding bus bar per manufacturer's instructions in each MDF and IDF.

3.03 CABLE HANGER AND SUPPORTS

A. Install J-hook cable hangers and supports per manufacturer's written instructions.

B. J-hook cable hanger spacing shall be 48" or less and within 12" of sleeves and/or junction/back boxes.

C. Install J-hooks pathways perpendicular/parallel to building structure – no diagonal runs.

3.04 LOW VOLTAGE PATHWAY/RACEWAYS

A. EMT conduits may be used at following locations (see Division 26 for additional requirements):

1. In dry locations in furred spaces.
2. In partitions other than concrete or solid masonry.
3. In protected exterior locations not exposed to direct weather.

B. Rigid steel conduit and fittings shall be used for vertical risers and on top of all roofs, overhangs, walkways, canopies, or any other location exposed to direct weather. See Division 26 for additional requirements.

C. Furnish and install pull lines in all unused (empty) conduits or raceways. All pull lines shall be permanently tagged with identification at both ends.

D. Install exposed conduits neatly, parallel to or at right angles to structural members. Maintain a minimum of 12 inches of clearance from steam or hot water pipes. All installed strut channel

supports should allow for future conduit attachments. The width of strut channel to match the width of the closest attached junction box. See design document details for attachment requirements.

F. Supports: Support conduit with two-hole straps or strut channel where shown in design documents and/or specified. Coordinate supports with architectural details. Secure to wood structure by means of bolts or lag screws, to metal by means of shallow self-tapping screws, to concrete by means of insert or expansion bolts, to brickwork by means of expansion bolts, and to hollow masonry or stucco by means of toggle bolts.

G. Spacing for all EMT and rigid steel conduit supports shall be as follows, unless otherwise specified in design documents details:

1. Surface conduit spacing and supports and unless otherwise specified or shown on drawing details:
   a. EMT – Size 3/4” to 2” – 4’ maximum spacing (3 each supports per 10’ conduit length) and 12” from each end of conduit at coupling, connector, or 90-degree bend.
   b. Rigid steel – Size 3/4” to 2” – 4’ maximum spacing (3 each supports per 10’ conduit length) and 12” from each end of conduit at coupling, connector, or 90-degree bend.

H. If conduit is designated for low voltage use, no more than a total of 360 degrees of conduit bend radius will be allowed between pull/junction boxes.

I. All junction boxes shall be connected to conduits using appropriate connecting hardware (i.e. box connectors).

J. Clean, prep and paint with existing matching wall color all exposed conduit, junction boxes, channel strut, fittings, and accessories.

K. Non-metallic raceway to be installed with mechanical fasteners only, do not remove adhesive tape backing.

L. Capping

1. Cap conduits with manufactured seals during construction. Swab out conduits before installing wires.
2. Cap all empty conduits below grade and in pull boxes with manufacturer's caps to prevent entrance of debris; attach pull string to cap.

M. Underground Conduit

1. Service provider conduits shall be:
   a. AT&T – one ea. 4”
   b. Comcast – two ea. 2” (one spare)

2. #10 tracer wire or tracer tape is required for all underground Division 27/28 PVC conduits.

3. Before pulling any conductors into an underground PVC conduit (new or existing), the conduit shall be first be proofed by pulling through a mandrel of a diameter ¼ in. smaller than the conduit inside dia., followed by a swab of the same diameter as the conduit inside diameter. IOR to witness the proofing of underground PVC conduits.

3.05 J-BOXES

A. Screws shall be used to attach boxes, and must be accurately placed for finish, independently and securely supported by adequate wood backing or by manufactured adjustable channel type heavy-duty box hangers.

1. Boxes shall be attached to metal studs with metal box hangers.
2. Boxes installed in masonry tile or concrete block construction shall be secured with auxiliary plates, bars, or clips, and be grouted in place.

B. Locate outlets at the following heights unless otherwise noted on Drawings, Specifications, current CBC, or as required to meet ADA handicap requirements.

1. Data Outlets: Same height as electrical outlets
2. Telephone Wall Outlets: Above counter/backsplash height or at electrical switch height.

C. Boxes shall be placed within 18” of electrical outlets.

D. For sound control, separate outlets on opposite sides of walls with a 16" minimum separation. Where outlets are less than 16" or in sound rated walls, seal airtight with fire rated sheet putty pads. Fill gap between junction box and wall with acoustic sealant all around perimeter of junction box. Fill conduits larger than 1 1/4" with fire rated putty.

E. Installation of conduit and outlet boxes in fire-resistive walls, floors, floor-ceiling or roof-ceiling assemblies shall comply with Title 24, Part 2, Section 713.

3.06 GROUND BOXES

A. To be installed per Division 26 requirements.

B. Provisions are to be made for supporting cables from the box sides (i.e., j-hooks, d-rings)

C. Install a 24” x 36” ground boxes for each service providers AT&T/Comcast/other at service tie-in location.

D. Maximum underground conduit bend degrees is 360°. Additional ground boxes are required to keep conduit bends under 360°.

E. 200’ is the maximum spacing between ground boxes.

F. 17”x30” ground boxes are acceptable for mid-span pull boxes for both AT&T and Comcast.

G. 17”x30” ground boxes are acceptable for 4 – 2” conduits from a maximum of 2 sides (8 conduits total).

H. 24”x36” ground boxes are appropriate for 4 – 2” conduits from 3 sides (12 conduits total)

3.07 CONDUIT PENETRATIONS AND SLEEVES

A. PENETRATIONS:

1. Where conduit passes through walls, ceilings, or floors, with connection points to junction boxes or raceways mounted to both sides of the same wall, provide a threaded conduit and secured in place with locking rings on both sides.
2. Where the conduit passes through walls, ceilings, floors with connection points to junction boxes or raceways not mounted to the same wall as the penetration, provide EMT conduit and secured in place with strut channel.
3. Penetrations through fire rated assemblies to use EZ-Path or an approved equal fire rated sleeves.

B. SLEEVES

1. Conduit sleeves are to extend 6” past wall surface and be securely attached to the building structure, with plastic bushings on both ends.
2. Sleeves through fire rated assemblies to use EZ-Path or an approved equal fire rated sleeves and to be installed per manufacturer’s instructions.

C. FIRE STOPPING

1. Seal all conduit penetrations through fire-rated walls and floors in a manner that is fire and smoke tight in conformance with current CBC and current CEC. See Division 07 for more information.

D. DRAFT STOPPING

1. All non-fire-rated walls must be draft-stopped and sealed. Submit method to be used for approval the District’s representative Mineral wool is one product that may be used. See Division 07 for more information.

E. WEATHER SEALING

1. All exterior penetrations shall be sealed watertight. The contractor shall use silicone rubber caulk or other approved methods and materials. Submit methods and materials to the District’s representative. See Division 07 for more information.

3.08 CLEANING

A. Clean all work prior to concealing, painting, and acceptance. Performed in stages if directed.

B. Clean and repair soiled or damaged painted exposed work before final acceptance in a manner to match adjoining work.

C. Remove debris from inside and outside of equipment and enclosures.

3.09 PAINTING

A. Paint exposed conduit and j-boxes occurring in finished areas with existing matching wall color. See 09 91 00 – Painting

3.10 FINAL DOCUMENT SUBMITTALS

A. See 27 00 00 for more information.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MANUFACTURER	PART NUMBER
10" Round Ground Box Traffic Rated Bolt Down Lid	Jensen Christy	HTV10-5 G05
10"x17" Rectangular Ground Box Traffic Rated Metal Lid	Jensen Christy	HT1017 B1017
17"x30" Rectangular Ground Box Traffic Rated Metal Lid	Jensen Christy	HT1730 B1730
24"x36" Rectangular Ground Box Traffic Rated Metal Lid	Jensen Christy	HT2436 B2436
24"x36" Rectangular Ground Box Traffic Rated AT&T	Jensen	100010927
Cable tray, wire basket, ceiling mounted	Snake Tray	201 series ceiling mounted
Cable tray, wire basket, wall mounted	Snake Tray	501 series wall mounted
Cable tray, solid bottom, center hung style	MonoSystems	RTCX-XX-120-PX
Cable tray, solid bottom, wall mount style	MonoSystems	RTWX-XX-120-PX
Non-metallic Surface Raceway	Legrand/Wiremold	2300 Series
Non-metallic Surface Raceway	Legrand/Wiremold	5400/5500 Series
Floor Box (Data/Power)	FSR	FL-500P
Fire Rated Sleeve	Specified Technologies Inc.	EZ Path
Fire Rated Sealant	Specified Technologies Inc. Hilti	SpecSeal products CFS products
Conduit, Fittings, J-Boxes	Commercial grade from local electrical supply companies.	Commercial grade from local electrical supply companies.
J-Hooks	Nvent Cooper	Caddy Series B-Line Series
Grounding Bus Bar	Chatsworth Products	10622-012

END OF APPENDIX A

END OF SECTION

SECTION 27 10 00

STRUCTURED CABLING

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, installation, configuration, and testing requirements for a complete and operable Structured Cabling communications system. The system shall provide highly reliable and high-performance data communication from main distribution frame (MDF) through each intermediate distribution frame (IDF) to end points requiring fiber optics and/or copper cabling and associated equipment.

B. This section condenses sections 27 11 00 – Communications Equipment Room Fittings, 27 13 00 – Communications Backbone Cabling, 27 15 00 – Communications Horizontal Cabling and 27 16 00 – Communications Connecting Cords into one comprehensive section.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Contractor shall furnish and install all required components and accessories as outlined in the design documents for a complete and operable turn-key system.
2. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship. Contractors unfamiliar with the District's standards shall familiarize themselves with the standards and requirements prior to beginning work
3. The Contractor shall furnish and install fire-treated ¾" (three quarter inch) plywood for the MDF room (all walls, from floor level to 8' high) and IDF locations (as required or indicated in the design documents).
4. The Contractor shall furnish and install a ground bus bar at the MDF and IDF rooms.
5. The Contractor shall furnish and install all required racks and cabinets.
6. The Contractor shall furnish and install all newly required conduit/raceway.
7. The Contractor shall furnish and install all wire/cable (copper/fiber optic) as required.
8. The Contractor shall terminate all strands of fiber at each fiber enclosure.
9. The Contractor shall furnish and install termination at all end-point equipment (patch panels, jacks, wallplates, enclosures, etc.).
10. The Contractor shall furnish and install all patch cords (copper/fiber).
11. The Contractor shall test and certify (for warranty) the installed cable plant.

1.03 RELATED REQUIREMENTS

A. Section 01 – General Requirements

B. Section 27 00 00 – Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

1.04 INDUSTRY GUIDELINES AND STANDARDS

A. California Electrical Code (CEC) – Current adopted version

B. California Building Code (CBC) – Current adopted version.

C. ANSI/TIA-568.0-D – Generic Communications Cabling for Customer Premises.

D. ANSI/TIA-568.1-D – Commercial Building Communications Cabling Standard Part 1: General Requirements.

E. ANSI/TIA 568-C.2 – Balanced Twisted-Pair Telecommunications Cabling and Components Standards

F. ANSI/TIA 568.3-D – Optical Fiber Cabling Components Standard

G. ANSI/TIA-569-D – Commercial Building Standard for Telecommunications Pathways and Spaces.

H. ANSI/TIA-606-B – Administration Standard for the Commercial Telecommunications Infrastructure.

I. ANSI/JSTD-607-C – Commercial Building Bonding and Grounding (Earthing) Requirements for Telecommunications.

1.05 QUALIFICATIONS

A. The contractor shall possess a California C7 or C10 license.

B. The Contractor or Subcontractor shall have 5 years' documented experience.

C. The Contractor and installers shall be certified by the product manufacturer.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing data cable plan system.

1.07 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

1.08 SUBMITTALS

A. See section 27 00 00 for requirements.

1.09 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

C. 25-year manufacturer's warranty/certification required for all copper and fiber cable plant installations.

1.10 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. See Appendix A at the end of this document for pre-approved materials.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. The Contractor shall confirm all equipment part numbers with the District's representative prior to ordering equipment and updating submittals as required.

D. The Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory installation and operation.

E. The Contractor shall install mounting hardware and anchors as recommended by the Manufacturer of the equipment that requires mounting to the building or structure and adhere to all code requirements. See section 27 05 00 for requirements.

F. Product Availability

1. The Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.

2.02 MANUFACTURERS AND PRODUCTS

A. See Appendix A at the end of this document for pre-approved materials.

B. Product Substitutions require proof of equivalence and approval by District's representative. Substitution requests to be submitted in writing.

C. For maintenance and consistency with the existing installed base, data connectivity components (copper and fiber) shall be Superior Essex cable and Ortronics connectivity.

2.03 COPPER/FIBER OPTIC CABLES AND COMPONENTS

A. All copper cables and components shall be Cat6A rated.

1. Cable to be reduced diameter. White jacket for default cable, Blue jacket for CCTV and Access Control only.
2. Jacks to be keystone style.
3. All cables shall be terminated on keystones at IDF/MDF end. No modular plug terminations are permitted at IDF/MDF locations.
4. Outside plant (OSP) Category cable is acceptable for data drops that cannot be attached to a building (i.e. AP and cameras on light poles, irrigation controllers, monuments, etc.) and must be serviced by underground conduits. Standard data drops shall not utilize OSP Category cables (unless approved by the District's representative in writing).

B. Patch cords system/color:

1. Data = White color
2. AP = Green color (2 ea. req'd at each AP)
3. CCTV = Blue color
4. Clock/Intercom = Yellow color
5. Access Control = Black color
6. Fire Alarm/Intrusion Alarm = Red color

C. Patch cord length

1. At patch panel 6" typical or no more than 12" slack.
2. Station-side patch cords to be 10' in length.

D. Data jacks system/color:

1. Data/default = White color
2. AP = Green color
3. CCTV = Blue color
4. Clock/Intercom = Yellow color
5. Access Control = Black color
6. Fire Alarm/Intrusion Alarm = Red color

E. Fiber Optic Cable:

1. Minimum strand count is 24.
2. All fiber optic cables and components shall be single single-mode OS2 rated.
3. Fiber optic cable terminations shall be LC-Duplex style.

PART 3 – EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The components making up the structure cabling system shall only be installed by Contractors who are qualified to install, service and maintain the system.

B. Cable terminations (copper or fiber) shall be installed by manufacturer-certified technicians.

C. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to job bidding. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for accurate bidding and performance of the Work.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall order all required parts and equipment upon receipt of approved product submittals.

B. The Contractor shall verify the availability of power where required.

3.04 SHOP DRAWINGS

A. The Contractor shall create "Shop Drawings" per section 27 00 00 for this section.

B. Submit drawings for review and approval by the District's representative.

3.05 INSTALLATION

A. ENTRANCE FACILITIES

1. Contact telecommunications service provider and arrange for installation of demarcation point, protected entrance terminals, and housing when so directed by service provider.
2. Install underground or aerial pathways complying with recommendations in TIA/EIA-569-A, "Entrance Facilities" Article.

B. UNDERGROUND ENTRANCE PATHWAY

1. Install the underground entrance pathway complying with Division 26.

C. EQUIPMENT RACKS, CABINETS, ENCLOSURES AND ACCESSORIES

1. Backboards:
   a. Shall be installed behind the rack or cabinet if the cabinet is not able to be directly attached to two vertical wall studs.
   b. Backboards shall be made of fire retardant or treated materials, squarely cut, and with sanded edges
   c. Backboards shall be a minimum ¾" thick and large enough to secure it to two vertical wall studs.
   d. The "FIRE RATED" stamp shall be visible.
   e. Backboards shall be fastened with ¼" lag bolt and washer, non-recessed, with maximum spacing of 18" into 2 vertical studs, 1-1/2" embedment, or otherwise per DSA-approved anchorage details.
   f. Visible portions (outside of cabinet) of Backboards shall be painted black or wall color per Architect.

2. All data & voice communications racks and cabinets shall be anchored in accordance with manufacturer's specifications, project specifications and/or drawn details, to walls and floors and grounded to building ground grid (not to water pipes etc.).
3. Securely mount equipment cabinet and racks to the building structure. A proper quantity of support fasteners shall be utilized. Typically lag bolts for wood installations, wedge anchors for concrete flooring. Submit data sheets for mounting fasteners for approval before installation. Mount equipment per DSA approved drawings/details.
4. Equipment cabinet mounted on or against walls will have 3-foot clearance in front of deepest component and accessible to rear for service.
5. MDF and all IDFs shall have at least one dedicated 120VAC 20-amp quad-receptacle each.
6. Patch Panels: Mount patch panels into the cabinet/rack. Match manufacturer of existing install or if new construction, see Appendix A.
   a. Patch panel ports shall be grouped by Room and then by System (General Data, Intercom, AP, Other). Label the patch panel with the first port of each Room.
   b. Exterior devices shall be grouped with the closest adjacent interior space.
   c. Do not segregate patch panels by system unless specifically directed on the rack elevation.

7. Cable Management: Secure the cable bundle(s) to the rack strain relief and cable management behind the patch panels and cross connect block panels. Install horizontal cable management panels and brackets for routing and management of patch cables. Maintain TIA/EIA and BICSI standards on bundling, supporting and bend radius.
8. Surge Protected Outlet Strips: Required in MDF rack. Mount surge protected outlet strips per Manufacturer's directions. Refer to details on the Drawings for mounting location.

D. MDF/IDF GROUNDING

1. Refer to Section 27 05 00 Grounding for more requirements.
2. Locate the grounding bus bar to minimize the length of bonding conductors. Fasten to the wall allowing at least 2-inch (50-mm) clearance behind the grounding bus bar. Connect grounding bus bar with a minimum No. 6 AWG grounding electrode conductor from grounding bus bar to suitable electrical building ground.

3. Bond metallic equipment (including ladder rack) to the grounding bus bar, using not smaller than No. 6 AWG equipment grounding conductor.

3.06 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with the highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

3.07 WIRE/CABLE (COPPER/FIBER OPTIC)

A. Design, layout, size, and plan new cable runs as required.

B. All wire and cable passing through metalwork shall be sleeved by an approved grommet or bushing.

C. Conduit/raceway fill shall not exceed 40 percent of interior cross-sectional area.

D. Neatly dress and tie (Velcro) all cabling.

E. UTP cabling shall conform to a 6-foot separation requirement from the main power panel, transformers, switchgear and/or starter motors adjacent to the MDF, IDF and termination locations.

F. Fiber optic cables shall be installed from the MDF to each IDF.

G. Orange corrugated HDPE (High Density Polythylene) Innerduct shall be used for fiber optic cable protection in all interior locations.

H. Spicing of fiber optic cable shall be done with fusion splices.

I. When required copper feeders (minimum 4-pair) are to be installed from the MDF to each IDF.

J. Maintain proper bend radius for all cable installations.

K. Do not exceed cable manufacturer's instructions for installation pull load. Any cable damaged by excessive pull force shall be replaced by the installation contractor.

L. Modular plug terminated link (MPTL) style wiring is acceptable for CCTV with modified single connector permanent link testing.

3.08 LABELING

A. Correct room numbering is critical, and labels shall match room signage. The Contractor shall verify all room numbers against the approved signage submittal prior to labeling.

B. MDF/IDF - Identification number in large font on front of cabinet.

1. The MDF shall be labeled MDF 1.00
2. IDF's shall be labeled sequentially beginning at IDF 1.01, then IDF 1.02, and so on.

C. MDF, Fiber Optic LIU Ports – IDF number and room number

D. MDF/IDF, Copper Patch Panel – Panels labeled P1, P2, P3, etc., ports labeled with room number.

E. LAN Outlet – IDF number, patch panel number, patch panel port number.

F. Cables to be labeled both ends with unique identifiers and from/to location identifiers. For Copper Cat cable IDF number, patch panel number, patch panel port number.

G. T-bar ceilings shall have device labels attached next to the device for ceiling mounted equipment and at the tile for above ceiling equipment with device type and device ID points/IP address.

3.09 CONDUIT AND RACEWAY INSTALLATION

A. See Division 26 and section 27 05 00 for additional requirements.

B. Conduit bodies and any other sharp bend fittings are strictly prohibited for communications cabling (copper/fiber).

C. Install proper radius conduit sweeps where required.

3.10 FIELD QUALITY CONTROL AND TESTING

A. All Fiber and Cat6a copper cable installations to be certified by testing with an certified test system that is approved by the manufacturer for warranty certification (typically a Fluke).

B. Submit the Record Drawings (as-builts) to the District's representative for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system, the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District's representative when ready to perform a re-inspection of the installation.

F. Provide 25-year manufacturer's warranty/certification documentation for all copper and fiber cable plant installations.

3.11 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Rack Cabinet 7’ (43U), 41” Deep	Chatsworth Products	Z4-21N-113C-C12
Wall Mount Cabinet 24” (12 RU) 30” Deep *(retrofit only, not for new construction)*	Chatsworth Products	12419-724
CUBE-iT Fan Kit	Chatsworth Products	40972-001
20 AMP Power Strip	Chatsworth Products	12848-701
Standard Busbar	Chatsworth Products	10622-010
12" Ladder Rack 10'	Chatsworth Products	11275-712
Ladder Rack Triangular Support Bracket	Chatsworth Products	11746-712
Ladder Rack Wall Angle Support 12"	Chatsworth Products	11421-712
Ladder Rack Butt-Splice Kit	Chatsworth Products	11301-712
Ladder Rack Foot Kit	Chatsworth Products	11309-701
19” Horizontal Cable Manager	Ortronics	808004759
Patch Panel 24-port 1-RU (Black)	Ortronics	OR-SPKSU24
Patch Panel 48-port 2-RU (Black)	Ortronics	OR-SPKSU48
Patch Panel Cable Management Support Bar	Ortronics	OR-CMBFR0RU
Faceplate, 2-port (White)	Ortronics	KSFP2-88
Faceplate, 4-port (White)	Ortronics	KSFP4-88
Surface Mount, 2-port (White)	Ortronics	KSSMB2
Faceplate, 1-port Phone Hanger (Stainless)	Ortronics	403STJ1WP
Cat6A Data Jacks (White)	Ortronics	KT2J6A-88
Cat6A Data Jacks (Green)	Ortronics	KT2J6A-45
Cat6A Data Jacks (Blue)	Ortronics	KT2J6A-36

Cat6A Data Jacks (Yellow)	**Ortronics**	**KT2J6A-44**
Cat6A Data Jacks (Black)	**Ortronics**	**KT2J6A-00**
Cat6A Data Cable, Plenum (White = default)	**Superior Essex**	**6B-246-4B**
Cat6A Data Cable, Plenum (Blue = CCTV/Access Control)	**Superior Essex**	**6B-246-2B**
Cat6A Data Cable, Indoor/Outdoor (Black)	**Superior Essex**	**6B-272-ER**
Cat6A Data Cable, OSP (Black)	**Superior Essex**	**04-001-A8**
Extended Distance PPoE Cable, OSP	**Superior Essex**	**PW04-401-48**
Cat6A Patch Cord – for Extended Distance links only (Black)	**Monoprice**	**44669**
Cat6A Patch Cord Slim (White) (12” typ.)	**Quiktron**	**576A-RD25-0xx (xx = length)**
Cat6A Patch Cord Slim (Blue) (12” typ.)	**Quiktron**	**576A-RD10-0xx (xx = length)**
Cat6A Patch Cord Slim (Green) (12” typ.)	**Quiktron**	**576A-RD20-0xx (xx = length)**
Cat6A Patch Cord Slim (Yellow) (12” typ.)	**Quiktron**	**576A-RD15-0xx (xx = length)**
Cat6A Patch Cord Slim (Black) (12” typ.)	**Quiktron**	**576A-RD35-0xx (xx = length)**
Fiber Optic LIU 1-RU	**Ortronics, Q-Series**	**EQ01U-CHC**
Fiber Optic LIU 2-RU	**Ortronics, Q-Series**	**EQ02U-CHC**
Fiber Optic LIU 4-RU	**Ortronics, Q-Series**	**EQ04U-CVC**
Splice Tray	**Ortronics, Q-Series**	**FST4-F012 w/ mounting bracket WQS-STB**
Fiber Optic Adapter	**Ortronics, Q-Series**	**OFP-LCQ24AC**
Fiber Optic LC Field Term Connector	**Ortronics**	**205KNF9SA-09**
Fiber Optic Cable 24-strand, Single-Mode OS2, Indoor/Outdoor	**Superior Essex**	**W4024K101**

END OF APPENDIX A

END OF SECTION

SECTION 27 21 00

DATA COMMUNICATIONS NETWORK EQUIPMENT

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, installation, configuration, and testing requirements for a complete and operable data network system. The system shall provide reliable and high-performance data communication throughout the site.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Provide, coordinate, and install all required equipment, licenses, and accessories as outlined in the design documents for a complete and operable system.
2. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, utilities, construction equipment and machinery, transportation, and other facilities and services necessary for the proper execution, operation, and completion of a turn-key system to the District.
3. Data Communications Network Equipment: Includes, but is not limited to:
   a. Core Switch/Router
   b. Access Switches
   c. Wireless Access Points
   d. Licenses
   e. Uninterruptible Power Supplies (UPS)
4. Data Switches are to be programmed/configured by the contractor to the District's specifications. Contractors are responsible for retaining a Cisco-certified network engineer to complete this scope if they do not possess this capability in-house.

1.03 RELATED REQUIREMENTS

A. Division 01 - General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 - Common Work Results for Communication Systems.

D. Section 27 10 00 - Structured Cabling

1.04 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five years' experience installing data network equipment and systems.
C. Contractor shall have or retain a Cisco-certified network programmer.

1.05 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing data network infrastructure.

1.06 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

1.08 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.09 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. See Appendix A at the end of this document for pre-approved materials.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.
1. Cisco equipment shall be new, genuine, and obtained only from a Cisco-certified distributor. It shall carry the full Cisco standard warranty. Refurbished, remanufactured, recertified, and/or otherwise "grey" market equipment will be rejected.
2. Cisco "EDU" SKU's may not be substituted for their non-EDU equivalents. EDU products shall carry the enhanced EDU warranty, as applies.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. Contractor shall provide all components needed for complete and satisfactory installation/operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.
2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. The District's preferred manufacturer for:

1. Core Switch / Router - Cisco
3. Networking Switches – Cisco
4. Wireless Access Points - Cisco
5. UPS – N1C

B. Substitutions require proof of equivalence and approval by District's representative.

C. All equipment shall be provided with Licenses as required for seamless integration with the District's network infrastructure.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing data network equipment before the Bid Opening Date.

C. The Contractor shall have or retain a Cisco-certified network programmer to carry out programming the Cisco network equipment to the District's specifications.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding for the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's representative of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's representative.

C. The Contractor shall coordinate with the District's representative for needed configuration information (templates, topology, hostnames, IP addresses, etc.) at least 4 weeks prior to configuration/installation.

3.04 SHOP DRAWINGS

A. The Contractor shall create "Shop Drawings" per section 27 00 00.

3.05 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with the highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

3.06 PATHWAY AND EQUIPMENT INSTALLATION

A. Equipment to be installed per manufacturer's instructions.

B. MDF/IDF locations with multiple switches shall utilize backplane stacking. Provide the necessary quantity of stack kits.

C. IDF locations with multiple switches shall utilize a PortChannel configuration with redundant fiber pairs back to the MDF. Provide (2) EA. SFP modules at the IDF side and (2) EA. SFP modules at the MDF side. Utilize the first fiber pair and the last fiber pair (strands 1, 2, and 23, 24) unless existing conditions require a different configuration.

3.07 EQUIPMENT COMISSIONING/CONFIGURATION

A. The Contractor shall install the equipment and patch in all connections.

B. The Contractor shall fully program and commission the network switches utilizing a District-provided configuration template. Standard commissioning includes:
   1. Updating the switch firmware to the current “golden image” as provided by Cisco.
   2. Loading the District-provided template configuration on each switch. Make appropriate updates for each switch’s unique hostname, IP address, VTP domain, and similar parameters.
   3. Identifying ports for systems requiring dedicated VLANs and configuring the ports for those VLANs.
   4. Performing basic connectivity and functionality tests.

D. Programming must be completed off-site at the Contractor’s facility or while directly connected to the equipment at the job site. VPN access will not be provided.

E. At least 4 weeks prior to system activation, provide a list of interior and exterior wireless AP MAC addresses correlated to room/location. Provide this list to the District’s representative in an electronic spreadsheet format.

F. All equipment is to be fully configured and tested for functionality by the Contractor prior to District acceptance testing.

3.08 LABELING

A. The contractor shall be responsible for labeling all newly-provided active equipment per District standard.

B. Correct room numbering is critical and labeling shall match room signage. The Contractor shall verify all room numbers against the approved door signage submittal prior to configuration/programming.

C. Network Switches

   1. ½” Label tape on front of switch, above SFP ports, with Host Name, IP address, and stack position (if applicable)
   2. Host Names shall follow the format
   <Site Code>-<IDF#>-<Location>-<Model>-<Ports>-<Stack>
   For example, Oak Ridge, IDF 1, Room A120, Cisco 9300, 48 port, two switch stack: ORIDGE-IDF1-A120-9300-48P-1-2

D. Wireless AP’s

   1. ½” label tape on center of AP, with Host Name
   2. Interior AP Host Names shall follow the format
   <Site Code>_AP_RM<location>_<last 4 of MAC address>
   Example: ORIDGE_AP_RMA101_XXXX
   3. Exterior AP Host Names shall follow the format
   <Site Code>_AP_EXTRM<location>_<last 4 of MAC address>
   Example: ORIDGE_AP_EXTRMA101_XXXX

3.09 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify the District's representative of readiness to perform the formal Test & Inspection of the complete system by the District's representative. Make all adjustments/changes required from District's representative review.

B. Submit the Record Drawings (as-builts) to the District's representative for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system and have personnel available with tools and equipment to inspect wiring, devices, and system operation. Also have the programmer available to make programming configuration changes.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District's representative when ready to perform a re-inspection of the installation.

3.10 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Network Switch	Cisco	C9300L-48UXG-4X-EDU
Network Switch License (DNA	Cisco	C9300-DNA-E-48-3Y

Essentials, 48-port, 3-yr)		
Network Switch Secondary Power Supply	Cisco	PWR-C1-1100WAC-P
SFP transceiver	Cisco	SFP-10G-LR
Stack Kit (9300 to 9300)	Cisco	C9300L-STACK-KIT
Stack Extended Cable (IDF's with 3+ switches)	Cisco	STACK-T3A-1M
DAC Cable (9300 to previous gen switch; not common)	Cisco	SFP-H10GB-CU1M
Core Switch (sites with 11 or fewer IDFs)	Cisco	C9500-24Y4C-EDU
Core Switch (sites with 12 or more IDFs)	Cisco	C9500-48Y4C-EDU
Core Switch License (DNA Essentials, 3-yr)	Cisco	C9500-DNA-E-3Y
Core Switch Power Supply	Cisco	PWR-C4-950WAC-R
Wireless Access Point (Interior) (note: includes low-profile bracket and ceiling grid clip)	Cisco	C9130AXI-B
Ceiling Mount Bracket (Low-profile) for C9130AX	Cisco	AIR-AP-BRACKET-1
Ceiling Mount Bracket (Universal/ Electrical Box) for C9130AX	Cisco	AIR-AP-BRACKET-2
T-bar Mount Bracket (Recessed Tiles) for C9130AX	Cisco	AIR-AP-T-RAIL-R
T-bar Mount Bracket (Flat Tiles) for C9130AX	Cisco	AIR-AP-T-RAIL-F
Wireless Access Point (Exterior/Surface)	Cisco	C9124-AXE-B with 4 Ea. AIR-ANT2568VG
Wireless Access Point (Exterior/ with Oberon)	Cisco	C9124-AXI-B
Wall/Pole Mount for C9124-AXI-B	Cisco	MNT-VERT1
Exterior AP Enclosure	Oberon	1021-00
UPS (MDF 4-post) with network monitoring and external battery (2000VA, 50AH) 120VAC input	N1C	N1C.LR2000, N1C.L4850EBM2U (For 2 post rack mount only - add N1C.24RAILKIT)

UPS (MDF 4-post) with network monitoring and external battery (2000VA, 50AH) 208-240VAC input	N1C	N1C.LR2000G, N1C.L4850EBM2U (For 2 post rack mount only - add N1C.24RAILKIT)
UPS (IDF) with network monitoring (1000 VA) 120VAC input	N1C	N1C.L1000
UPS (IDF) with network monitoring (1500 VA) 120VAC input	N1C	N1C.L1500
UPS (IDF) with network monitoring (2000 VA) 120VAC input	N1C	N1C.L2000

END OF APPENDIX A

END OF SECTION

SECTION 27 30 00

VOICE COMMUNICATIONS

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable Voice Communications system.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Voice Communication system to the District.
2. The contractor will coordinate with the District's representative in writing for any needed information (i.e. IP addresses, etc.) 10 business days prior to date the information is needed.
3. Voice Communication system equipment: Includes, but is not limited to:
   a. VoIP Phone Sets
   b. VoIP 5G Gateway
4. VoIP Phone Sets are to use District standard network cabling, see Section 27 10 00.

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

D. Section 27 10 00 – Structured Cabling

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing Voice Communication system where applicable.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

1.09 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five (5) years' experience installing communications equipment systems.

1.10 CERTIFICATIONS

A. See section 27 00 00 for requirements.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

F. Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Manufacturers – The District's IP Phone equipment is Cisco. See Appendix A at the end of this document for pre-approved materials.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.
1. Cisco equipment shall be new, genuine, and obtained only from a Cisco-certified distributor. It shall carry the full Cisco standard warranty. Refurbished, remanufactured, recertified, and/or otherwise "grey" market equipment will be rejected.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. The Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into their proposed Contract Time.
2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District's representative before ordering.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing electronic clock equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's representative of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's representative.

C. Submit and receive approval for shop drawings prior to work commencement.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

B. Existing Construction:

1. Refer to design documents.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per manufacturer's instructions.

B. Wall mounted VoIP Phone sets are to have a data drops to be installed inside flush single-gang back box at the location shown on the design documents (typically to the righthand side of the teaching wall).

C. Desktop VoIP Phone sets are to plugged into an appropriate location standard data connection.

3.06 CONFIGURATION

A. VoIP Phone sets will be programmed by the District after they are physically installed in the rooms and network connectivity is active. Notify the District's representative when phones have been installed and are ready for programming.

3.10 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify the District's representative of your readiness to perform the formal Test & Inspection of the complete system.

B. Submit the Record Drawings (as-builts) to the District's representative for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system, the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District's representative when ready to perform a re-inspection of the installation.

F. District's representative to provide final sign-off for acceptance.

3.11 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Standard IP Phone	Cisco	DP-9841-K9=
Advanced IP Phone	Cisco	DP-9861-K9=
Wall Mount Kit for Cisco 9800 Series IP Phones	Cisco	DP-9800-WMK=
Wall Hanger Kit (for standard 2-post phone hanger plate)	Slicshop	9800-BRKT-STN
Conference Room IP Phone	Cisco	CP-7832-3PCC-K9=
Analog to IP Adapter (ATA)	Cisco	ATA192-3PW-K9
5G Cellular Gateway (Internal Antenna)	Meraki	MG52-HW
5G Cellular Gateway (External Antenna)	Meraki	MG52E-HW
5G Cellular Gateway External Antenna	Meraki	MA-ANT-DUAL-C3
3-Year Enterprise License for 5G Cellular Gateway	Meraki	LIC-MG52-ENT-3Y

END OF APPENDIX A

END OF SECTION

SECTION 27 41 00

AUDIO-VISUAL SYSTEMS

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable audio-visual system. This system shall provide multi-media presentation capabilities for education and instructional purposes.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of turn-key audio-visual systems to the District.
2. The Contractor shall be responsible for all programming, commissioning, and activation of the Audio-Visual System.
3. The contractor will coordinate with the District's representative in writing for any needed information (i.e. IP addresses, etc.) At least 2 weeks prior to date the information is needed.

B. The District has standardized on 86" interactive flat panel display for standard classroom teaching A-V. The interactive display shall be integrated with the Assistive Listening System, see Section 27 51 26 for requirements.

C. Multi-purpose rooms shall be equipped with an integrated audio-visual system consisting of a video projector, rear-projection screen, video switcher, audio DSP, speakers, and related components, as indicated on the project documents. The audio-visual system shall be integrated with the Assistive Listening System, see Section 27 51 26 for requirements.

D. Gymnasiums shall be equipped with an audio system consisting of an audio DSP, speakers, and related components, as indicated on the project documents. The audio system shall be integrated with the Assistive Listening System, see Section 27 51 26 for requirements.

E. The Contractor is responsible for user/operator training (1-2 hours per system type).

F. The Contractor shall complete all required project closeout documentation in a timely fashion.

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

D. Section 27 10 00 – Structured Cabling

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Not used.

1.07 SUBMITTALS

A. Products Material Submittal:

1. See Section 27 00 00 for Contractor Product Submittal requirements.

B. Touch Screen Interface Submittal

1. The contractor shall provide a submittal including all touch-screen interface programming including each menu, submenu, and popup, for review and approval by the District's representative.

C. Post construction submittals

1. Provide as-built documentation in accordance with Section 3.
2. Submit owner's manual binders of all equipment documentation.
3. Provide a laminated simple operational sheet for end-users of system.
4. Provide backup copies of all A/V system programming files, including "uncompiled" copies of all 5. Extron programming and backups of the Audio DSP programming.
6. See Section 27 00 00 for requirements.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop drawings are required for this section.

1.09 QUALIFICATIONS

A. The Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. The Contractor shall have five (5) years' experience installing Assistive Listening/AV equipment systems.

C. The Contractor shall possess a California a C7 or C10 license.

D. The Contractor or Subcontractor shall be AV equipment manufacturer authorized to provide and install equipment with 5 years documented experience.

1.10 CERTIFICATIONS

A. The Contractor's installers shall be manufacturer certified.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. The Contractor shall comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. The Contractor shall perform the work with persons experienced and qualified to produce workmanship specified.

E. The Contractor shall maintain quality control over suppliers and Subcontractors.

F. The Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. The approved manufacturers for the project are:

1. A-V Control unit and related accessories: Extron
2. Interactive flat panel display: Newline
3. See Appendix A for additional pre-approved equipment/materials.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.
2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District’s representative before ordering.

2.03 CABLE

A. HDBaseT cable shall be manufacturer-specified shielded twisted pair specialty cable including manufacturer-specified terminations. For example, Extron systems shall utilize Extron-branded DTP cable and terminations.

PART 3 – EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified and certified by the manufacturer to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years’ experience installing educational A-V equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's representative of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's representative.

C. Submit and receive approval of shop drawings prior to work commencement.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per the manufacturer's instructions.

B. The Contractor shall coordinate with the District's representative if connecting to their network.

C. Installation shall be in accordance with applicable codes (i.e. NEC, NFPA 72) local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

D. Perform all Work as indicated on the approved Shop Drawings, Design Documents and Specifications.

E. All low voltage cables shall be kept away from power circuits.

F. Contractor shall provide programming and configuration each audio-visual system.

G. Cables/wire shall be installed in a neat and orderly manner. Loose cables/wires shall be bundled and wrapped with Velcro.

3.06 LABELING/SCHEDULES

A. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

B. Cables shall be identified with a machine-printed tag identifying the system type, source or head end location, and destination location in all access points (i.e. junction boxes, ground boxes, MDF, IDF, etc.) and as they enter or exit and conduit pathway.

3.07 CONFIGURATION

A. All equipment needs to be fully configured and tested for functionality prior to testing.

3.08 FIELD QUALITY CONTROL AND TESTING

A. The installation contractor will fine tune and test the systems for optimal audio and visual performance.

B. Multi Purpose Room Audio System:

1. Frequency Response: ± 3 dB per octave band, 125 Hz to 10,000 Hz. 3dB per octave roll off below 125 Hz and above 10 kHz.
2. Total Acoustical Harmonic Distortion: Less than 2% at 85 dBC (1kHz reference) at four feet (1,220mm) above finished floor in the middle of the room.
3. Adjust the gain structure for all audio system components (mixer input to amplifier output) to achieve the highest signal-to-noise ratio, 75 dB from 50 Hz to 15 kHz minimum.
4. Ensure that the audio frequency response of the electronics system with equalizers bypassed varies less than ±1 dB from 50 Hz to 12 kHz.
5. The electronic system audio distortion shall be less than 0.5% at 1 kHz at the equipment's rated input signal level.
6. Sound Output Capability: Provide program levels of not less than 95 dB and speech reinforcement levels of not less than 85dB in the seating area without objectionable distortion, rattles, or buzzes, employing as test signals several different samples of recorded music and microphones applied at each system input.
7. Hum and Noise: Hum and noise shall be inaudible (below the background noise level of the space) under normal operation and as observed in normal seat locations.
8. Manufacturer-provided speaker tuning and limiting presets shall be utilized in the programming of the amplifier.

C. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify the District’s representative of your readiness to perform the formal Test & Inspection of the complete system.

D. Submit the Record Drawings (as-builts) to the District’s representative for review prior to inspection.

E. During the formal Test & Inspection (Commissioning) of the system, have personnel available with tools and equipment to inspect wiring, devices, and system operation.

F. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

G. Notify the District's representative when ready to perform a re-inspection of the installation.

H. District's representative to provide final sign-off for acceptance.

3.09 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

B. As-built drawings shall be provided for this section.

3.10 TRAINING

A. The Contractor shall create quick start guides customized to the specific system being installed at each location. Quick start guides shall be prepared in advance of all training sessions so they can be distributed and reviewed with staff at time of initial training. All quick start guides shall be laminated.

B. The contractor shall make a video recording of all training sessions and export to digital medium (USB Drive) for District archive.

C. The Contractor shall provide 1-2 hours per system type (classroom, office, MP room).

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MANUFACTURER	PART NUMBER
Classrooms		
Touch Displays, 65”, for offices and smaller conf. rooms: i. Display ii. Display monitor wall bracket	i. Newline ii. Peerless	i. TT-6521Q ii. PA762
Touch Displays, 75”, for larger conf. rooms: i. Display ii. Display monitor wall bracket	i. Newline ii. Peerless	i. TT-7521Q ii. PA762
Touch Displays, 86”, for classrooms: i. Display ii. Mobile Cart iii. Mobile Cart Required Accessories iv. Assistive Listening Components, see Section 27 51 26	i. Newline ii. BalanceBox iii. BalanceBox	i. TT-8621Q (with Wi-Fi module) ii. eBox II (487A11011) iii. 481A70 481A89 481A92
Multipurpose Rooms / Gymnasiums		
Rack, Wall Swing	**Middle Atlantic**	**SR-40-28**
Rack Drawer	**Middle Atlantic**	**D3**
Video Switcher	**Extron**	**60-1570-12**
10” Wall Mount Touch Screen	**Extron**	**60-1566-02**
HDMI over Catx Transmitter (Decora)	**Extron**	**60-1741-52**
Projector	**Epson**	**EB-PU2213B**
Projector wall mount with cage	**BMS**	**CTAWA-PROJ PRO COMBO**
Projector Screen	**Da-Lite**	**70239**
4K Blu-Ray Player	**Tascam**	**BD-MP4K**
Audio DSP	**Allen Heath**	**AHM-64**
Amplifier	**Powersoft**	**Quattrocanali 4804 DSP**
PA Speaker	**Fulcrum**	**DX1295**
Wireless Microphone Receiver	**Shure**	**ULXD4D**
Wireless Microphone Transmitter	**Shure**	**ULXD2/B87A**
Wireless Microphone Antenna	**Shure**	**UA864US**

Power Sequencer	**Furman**	**CN-2400S**
XLR Female Decora	**RDL**	**D-XLR3F**
XLR Dual Female Decora	**RDL**	**D-XLR2F**
XLRF and 3.5MM Decora	**RDL**	**D-J3M**
XLR Male Decora	**RDL**	**D-XLR3M**
Assistive Listening Components	**See Section 27 51 26**	

END OF APPENDIX A

END OF SECTION

SECTION 27 51 23.50

EDUCATIONAL INTERCOM SYSTEMS

PART I – GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable Intercom/Public Address/Bell system. This system shall provide the ability to bi-directionally communicate with an individual room, broadcast to defined speaker zone(s) and ring bell tones on a predefined schedule. For sites that utilize the small message board, this section will supplant the use of section 27 53 13 Clock Systems.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Assistive Listening system to the District.
2. The contractor will coordinate with the District's representative in writing for any needed information (i.e. IP addresses, etc.) 10 business days prior to the date the information is needed.

B. The District has standardized on Rauland Telecenter U equipment and the installing Contractor shall be Rauland Telecenter authorized.

C. For existing construction – provide and install all components and accessories to modify the existing system while maintaining code compliance and to seamlessly integrate the new components into the existing campus' system. Prior to beginning any work, the Contractor is responsible for identifying any existing system errors or faults and bring these issues to the attention of the District's representative.

D. The Contractor shall be responsible for programming the Rauland Telecenter Intercom System.

E. The Contractor shall coordinate with site staff for Bell schedule programming requirements.

F. The Contractor shall review the proposed final system programming, functionality and expectations with the District's representative prior to final programming.

G. After completion of the installation and pretest of the system a satisfactory final test of the entire system shall be made in the presence of the inspector of record (IOR) and/or the District's representative.

H. The Contractor shall adjust any speaker levels to the appropriate level as determined in system testing.

I. Existing systems shall remain operable until the new system is accepted and approved by the District's representative.

J. The Contractor is responsible for user/operator training (maximum 2 hours).

K. The Contractor shall complete all required project closeout documentation in a timely fashion.

J. The Contractor shall provide and install hardware required for the interoperability with other systems (i.e. Fire Alarm, Intrusion Alarm, Electronic Access Control, Mecho Shades, etc.).

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 – Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

D. Section 27 10 00 – Structured Cabling

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing intercom system when applicable.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop drawings are required for this section.

1.09 QUALIFICATIONS

A. The Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five (5) years' experience installing Rauland Telecenter equipment.

C. The contractor shall possess a California a C7 or C10 license.

D. The Contractor or Subcontractor shall be Rauland Telecenter authorized to provide and install equipment with 5 years documented experience.

1.10 CERTIFICATIONS

A. Installers for this project shall be manufacturer certified.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. The Contractor shall comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. The Contractor shall perform the "Work" with persons experienced and qualified to produce the high-level workmanship specified.

E. The Contractor shall maintain quality control over suppliers and Subcontractors.

F. The Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. The approved manufacturers for the project are:

1. Control unit and related accessories: Rauland Telecenter U
2. Speakers: See Appendix A for different installation types
3. Wire, cable, and accessories: See Appendix A.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. The Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.
2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District 's representative before ordering.

C. Main system components:

1. Rauland Telecenter U IP Campus Controller and software
2. Rauland Telecenter U Auxilliary Input/Output Module
4. Rauland Telecenter U IP Classroom Module
5. Rauland Telecenter U Administrative Console
6. Rauland Telecenter U Program Line Input Module

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified and certified by the manufacturer to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing educational intercom equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's representative of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's representative.

C. The Contractor shall submit and receive approval for shop drawings prior to work commencement.

D. The Contractor will coordinate with the District's representative in writing for any needed information (i.e. IP addresses, etc.) at least 3 weeks prior to date the information is needed.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

B. Existing Construction:

1. Refer to design documents.
2. Surface raceway and components shall be Wiremold 2300.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per manufacturer's instructions.

B. The Contractor shall coordinate with the District's representative and provide a spreadsheet of all device MAC addresses indexed by device location for the programming of reserved IP addresses for each device.

C. Installation shall be in accordance with applicable codes (i.e. NEC, NFPA 72) local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

D. Perform all Work as indicated in the Drawings and Specifications.

E. All low voltage cables shall be kept away from power circuits.

F. Contractor shall provide programming and configuration of the Educational Intercom system for full functionality.

G. Contractor shall maintain a complete, up-to-date backup of the system configuration. Backup shall be maintained throughout the programming period until final Acceptance by the District's representative. Submit back-ups to the District's representative upon Final Acceptance.

3.06 LABELING/SCHEDULES

A. The Contractor shall verify all room numbers against the approved signage submittal prior to labeling.

B. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

C. Label all standard speaker cables with port ID.

D. Label all speakers with speaker ID.

E. Label all IP speakers with MDF/IDF, patch panel and jack numbers.

3.07 CONFIGURATION

A. All equipment to be fully configured and tested for functionality prior to testing.

B. Correct room numbering is critical for configuration/programming and labeling shall match room signage. The Contractor shall verify all room numbers against the approved signage submittal prior to configuration/programming.

3.08 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify the District's representative of your readiness to perform the formal Test & Inspection of the complete system.

B. Submit the Record Drawings (as-builts) to the District's representative for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District's representative when ready to perform a re-inspection of the installation.

F. The District's representative to provide final sign-off for acceptance.

3.09 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

B. As-built riser diagram showing all access control components for site.

3.10 TRAINING

A. For new systems provide 8-hrs end-user training.

B. For existing system upgrades provide 2-hrs end-user training.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
IP Campus Controller and software/licenses	Rauland Telecenter U	TCC2000
Administrative Console	Rauland Telecenter U	TCC2045
Auxiliary Input/Output Module	Rauland Telecenter U	TCC2033
Universal Rack Mounting Kit	Rauland Telecenter U	TCC2099
Program Line Input Module	Rauland Telecenter U	TCC2055
Zone page amplifier (25V, 14W/35W)	Rauland Telecenter U	Amplifier: TCC3022 Power Supply (over 14W): TCC3022PS
IP Classroom Module	Rauland Telecenter U	TCC2011B
Zone Page Module (used with external audio amplifier)	Rauland Telecenter U	TCC2022
Audio Power Amplifier (25V, 2x160W)	Powersoft	MEZZO 322A
8-Ohm 2'x2' Lay-in Ceiling Speaker, RJ-45 (common areas / hallways)	Rauland	BAFKIT2X2L8RJ Add: IP Classroom module
8-Ohm 8" Speaker assembly surface (retrofit)	Rauland	- Speaker USO880 - Backbox ACC1112 - Baffle ACC1003 - Add: IP Classroom module
8-Ohm 8" Speaker assembly flush (new construction)	Rauland	- Baffle w/speaker ACC1480 - Backbox ACC1000 - Add: IP Classroom module
25V 8" Speaker assembly flush (new construction restrooms)	Rauland	- Baffle w/speaker ACC1400 - Backbox ACC1100
Clock/Speaker surface combo (standard classroom/office retrofit)	Rauland	- Baffle w/ Speaker ACC3011S - Backbox ACC3011SBB - Message Board TCC3011S Add: IP Classroom module
Clock/Speaker flush combo (standard classroom/office new construction)	Rauland	- Backbox ACC3011FBB - Baffle w/speaker ACC3011S - Message Board TCC3011S Add: IP Classroom module
Exterior Speaker (retrofit)	Rauland Lowell Rauland FSR	Backbox: ACC1113 Baffle: ACC1012 Speaker: 8C10MRB Interior Backbox SMWB-4G-WHT - Add: IP Classroom Module (single

		speaker up to 2W) **Add: Wire breakout 603101 (when IP module used)**
Exterior Speaker (new construction)	**Lowell** **Rauland** **Rauland** **FSR**	**Speaker 8C10MRB** **Baffle ACC1012** **Backbox ACC1105** **Interior Backbox 4-gang generic** - **Add: IP Classroom Module (single speaker up to 2W)** - **Add: Wire breakout 603101 (when IP module used)**
Large Message Board (Clock)	**Rauland**	**TCC3012L**
Wire Guard for Large Message Board	**American Time**	**G2055OF-28**
Speaker, Exterior (25V)	**Lowell**	**Speaker: 8C10MRB-T72**
UPS (Telecenter Head End)	**N1C**	**N1C.L1500**
25V Speaker Cable	**West Penn**	**292**

END OF APPENDIX

END OF SECTION

SECTION 27 51 26

ASSISTIVE LISTENING SYSTEMS

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable Assistive Listening system. The system shall be provided in each assembly area, including conference and meeting rooms, in accordance with ADA Accessibility Guidelines for Buildings and Facilities (ADAAG) 2010 section(s) 216.10, 219, 706, and CBC section(s) 11B-216.10, 11B-219, 11B-706.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Assistive Listening system to the District.
2. The contractor will coordinate with the District's representative in writing for any needed information (i.e. IP addresses, etc.) at least 2 weeks prior to date the information is needed.

B. The Assistive Listening System shall be FM (72 MHz) for large venue systems, and IR for classroom and portable systems.

C. Assistive Listening equipment: Includes, but is not limited to:

1. Transmitters
2. Receivers
3. Earpiece/Neck loops
4. Chargers
5. Signs

D. Typical installation includes a transmitter with audio source input or microphone and portable rechargeable receivers with either neck loops or earpieces.

E. Permanently installed assistive-listening systems are required in areas if (1) they accommodate at least 50 persons or if they have audio-amplification systems, and (2) they have fixed seating. If portable assistive-listening systems are used for conference or meeting rooms, the system may serve more than one room. An adequate number of electrical outlets or other supplementary wiring necessary to support a portable assistive-listening system shall be provided.

F. The minimum number of receivers to be provided shall be equal to 4 percent of the total number of seats, but in no case less than two. Twenty-five percent minimum of receivers provided, but no fewer than two, shall be hearing aid compatible.

G. Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the provision of neck loops.

H. Classroom assistive listening systems shall be fully integrated with the classroom audio-visual system or mobile TV cart such that program audio is provided via the assistive listening system.

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

D. Section 27 10 00 – Structured Cabling

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing A-V system

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop drawings are required for this section.

1.09 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five (5) years' experience installing Assistive Listening/AV equipment systems.

1.10 CERTIFICATIONS

A. See section 27 00 00 for requirements.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

F. Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Manufacturers – The District has standardized on Listen Technologies.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation

specified. The contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.
2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District's representative before ordering.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing electronic assistive listening equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's representative of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's representative.

C. Submit and receive approval for shop drawings prior to work commencement.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

B. Existing Construction:

1. Refer to design documents.
2. Surface raceway and components shall be Wiremold 2300.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per manufacturer's instructions.

B. BASE TRANSMITTER (provide 1 for each permanent sound system).

1. Provide base transmitter with rack mount kit. Install where specified in the sound equipment rack and connect to content source.
2. Install antenna where specified and cabling from the Base Transmitter to the antenna location.
3. Program the transmitter to an interference-free transmit frequency in coordination with any adjacent systems

C. RECEIVERS (provide a quantity equal to or greater than 4% of the total number of seats, but in no case less than 2)

1. Install rechargeable batteries, if applicable
2. Program receivers to the broadcast frequency of the Base Transmitter

D. SIGN

1. Provide Assistive Listening System sign per ADA requirements to indicate equipment available for the hearing impaired. Verify location with the architect prior to installation. Submit sample for approval. The sign shall include wording that states "Assistive-Listening System Available" and shall be posted in a prominent place at or near the assembly area entrance, or ticket booth window as applicable. Verify location with architect prior to installation. Assistive listening signs shall include the International Symbol of Access for Hearing Loss.

E. PORTABLE SYSTEMS

1. The Contractor shall provide programming and configuration for each Assistive Listening System portable system to ensure interference-free operation between adjacent systems.

3.06 LABELING/SCHEDULES

A. The Contractor shall verify all room numbers against the approved signage submittal prior to labeling.

B. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

C. Cables shall be identified with a machine-printed tag identifying the system type, source or head end location, and destination location in all access points (i.e. junction boxes, ground boxes, MDF, IDF, etc.) and as they enter or exit and conduit pathway.

3.07 CONFIGURATION

A. All equipment to be fully configured and tested for functionality prior to testing.

3.08 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify the District's representative of your readiness to perform the formal Test & Inspection of the complete system.

B. Submit the Record Drawings (as-builts) to the District's representative for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system, the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District's representative when ready to perform a re-inspection of the installation.

F. The District's representative to provide final sign-off for acceptance.

3.09 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Portable ListenIR System	**Listen Technologies**	**LS-88-01**
Multi Purpose Room Components:		
Assistive Listening Base Transmitter (72MHz)	**Listen Technologies**	**LS-800-072-01**
Receivers (72 MHz)	**Listen Technologies**	**LR-4200-072**
Ear Speaker	**Listen Technologies**	**LA-401**
Neck Loop	**Listen Technologies**	**LA-430**
Universal Antenna Kit	**Listen Technologies**	**LA-122**
Universal Rack Mounting Kit	**Listen Technologies**	**LA-326**
Assistive Listening Notification Signage Kit	**Listen Technologies**	**LA-304**
RG-8 50 ohm Coaxial Cable	**Listen Technologies**	**LA-113**
RG-8 BNC connector	**Listen Technologies**	**LA-128**
12 unit charging tray	**Listen Technologies**	**LA-381**
3U rack drawer	**Middle Atlantic**	**D3**

END OF APPENDIX A
END OF SECTION

SECTION 28 31 00

INTRUSION DETECTION

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable electronic Intrusion Detection system. The system shall provide intrusion alarm notification, monitoring, command and control and be connected to the District's existing UL listed monitoring station.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Intrusion Detection system to the District.
2. The contractor will coordinate with the District's representative in writing for any needed information (i.e. IP addresses, etc.) at least 3 weeks prior to date the information is needed.
3. Intrusion detection equipment: Includes, but is not limited to:
   a. Control panels
   b. Keypads
   c. Motion detectors
   d. Door contacts
   e.. Monitor modules
   g. Wire
4. Typical installation includes a central control panel and keypad with distributed motion detection and/or door contacts for rooms requiring intrusion detection.
5. All exterior doors shall have door contacts.
6. All installations shall utilize network/data connectivity to the District's approved Central Station.
7. All control panels shall have battery backup.
8. All roof access hatches shall be monitored with surface mount door contacts.
9. Integration with the site Intercom system for audible alarm activation notification.

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

D. Section 27 10 00 – Structured Cabling

E. Section 27 51 13.50 Education Intercom Systems

F. Section 28 10 00 – Access Control

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing Intrusion Detection system.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop drawings are required for this section.

1.09 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five (5) years' experience installing intrusion detection equipment systems.

1.10 CERTIFICATIONS

A. See section 27 00 00 for requirements.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's representative will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. The Contractor shall comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. The Contractor shall perform the work with persons experienced and qualified to produce workmanship specified.

E. The Contractor shall maintain quality control over suppliers and Subcontractors.

F. The Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Manufacturers – The District standard for new construction is for Bosch Intrusion Detection Equipment (See Appendix A for pre-approved materials). For construction on existing sites the currently installed equipment is to be utilized and extended.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.
2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District's representative before ordering.

C. The control panel cabinet shall have a key lock.

D. The control panel cabinet shall have backup batteries.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing electronic intrusion detection equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's representative of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's representative.

C. The Contractor shall submit and receive approval for submitted shop drawings prior to work commencement.

D. The contractor will coordinate with the District's Representative in writing for any needed information (i.e. IP addresses, etc.) at least 4 weeks prior to date the information is needed.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

1. All intrusion wiring to be in conduit, surface raceway or above accessible ceilings on j-hooks.
2. Surface raceway and components shall be Wiremold 2300.

B. Existing Construction:

1. Refer to design documents.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per the manufacturer's instructions.

B. All wiring in enclosure shall have 12" minimum service loop for troubleshooting/repairs.

C. Data drops (jacks/2-port surface mount box) to be installed inside the control panel cabinet.

D. Door Contact to be flush mounted top of frame 4-6" from the strike side of all exterior doors. Pathway to extend from door frame to j-box above accessible ceiling. Coordinate pathway with Electronic Access Control. Door contacts to be double pole double throw (DPDT: 1st contact Intrusion, 2nd contact spare for HVAC use).

E. Overhead/Rollup doors to have a single-gang box (with cover) installed low on wall (less 12" AFF) for floor mounted door contact armored cable termination/monitor module. Contact armored cable shall be securely attached to the floor/wall to limit damage and/or trip hazard.

F. Keypad(s) installation locations are to be as follows: Elementary School = Admin Office, Middle and High Schools = Admin office and Custodial/Plant Manager office and other locations per the design documents.

G. Motion detectors are to be installed per the design documents but are typically wall corners adjacent to the windows pointing to the center of the room at 10'AFF. Quantity of motion detectors dependent on room size.

3.06 LABELING/SCHEDULES

A. The Contractor shall verify all room numbers against the approved signage submittal prior to labeling.

B. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

C. Device ID Labels are to be 1/4" lettering for mounting heights 10' AFF or less, 1/2" black lettering on white labels for mounting heights greater than 10' AFF.

D. Intrusion Control Panel/Cabinet label – Panel ID on exterior top right of panel door.

E. Battery label – Install date.

F. Wiring label – Panel, ID-Zone/Circuit.

G. Network Information label – MAC and IP address on interior top right of panel door.

H. Network Cable Termination label - MDF/IDF-port number.

I. Zone schedule – A zone schedule and device location drawing shall be printed and installed in a plastic sleeve inside the panel cover door.

J. Power panel/circuit and panel location if not in the same room.

K. For door contact modules mounted above accessible ceiling, a label shall be on the ceiling T-bar below the module location with the module point ID.

3.07 CONFIGURATION

A. Correct room numbering is critical for configuration/programming and labeling shall match room signage. The Contractor shall verify all room numbers against the approved signage submittal prior to configuration/programming.

B. Program all network equipment with network IP address information obtained from the District's representative.

C. At least one Master Partition/Area for the whole school site is required. Additional Partitions/Areas may also be required from design review meeting with District.

D. All equipment to be fully configured and tested for functionality prior to testing.

E. Coordinate with the District's representative for Central Station programming information (Account #, IP Address, etc.).

3.08 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, the Contractor shall perform a complete test and inspection of the system. If found to be installed and operating properly, the Contractor shall notify the District representative of your readiness to perform the formal Test & Inspection of the complete system.

B. Submit the Record Drawings (as-builts) to the District's representative for review prior to inspection.

C. During the Formal Test & Inspection (Commissioning) of the system, the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation. This test shall be witnessed by the District's representative. The project's Construction manager to coordinate testing schedules.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. The Contractor shall perform all needed corrections in a timely fashion.

E. The Contractor shall notify the District's representative when ready to perform a re-inspection of the installation.

F. The District's representative to provide final sign-off for acceptance.

3.09 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

B. As-built riser diagram showing all components for project.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Intrusion Control Panel	BOSCH	B9512G
Dual Battery Harness	BOSCH	D122
Transformer	BOSCH	D1640
Lock and Key Set	BOSCH	D101
Fire Enclosure	BOSCH	D8109
Transformer Enclosure	BOSCH	D8004
Keypad	BOSCH	D920
POPEX Module	BOSCH	B299
POPIT module	BOSCH	D9127U
Bosch Wall motion detector	BOSCH	ZX935Z
Wall-mount gimbal	DSC/DM-W	DM-W
Ceiling-mount gimbal	DSC/DM-C	DM-C
Door Contact Switch (metal door/frame)(DPDT)	George Risk Industries, Inc.	195-12WG
Door Contact Switch (surface)	George Risk Industries, Inc.	29A
Roll-up Door Contact	George Risk Industries, Inc.	4532
Terminal/Barrier Strip	IDEAL INDUSTRIES	89-608
Battery 12VDC, 8AH	ELK, Powersonic	ELK-1280, PS-1280
Cable, 18-2, Interior, White	West Penn	224
Cable, 18-2, OSP	West Penn	AQ-224
Cable, 18-4 Interior, Gray	West Penn	244
Cable, 18-2, OSP	West Penn	AQ-244

END OF APPENDIX A

END OF SECTION

SECTION 28 46 00

FIRE DETECTION AND ALARM

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, wire, materials, installation, configuration and testing requirements for a complete and operable Fire Detection and Alarm system. The system shall provide fire alarm detection, notification, monitoring, command, and control and be connected to the District's existing UL listed monitoring station. New construction shall be Emergency Voice Alarm Communication (EVAC) compliant.

1.02 SCOPE

A. The installed Fire Alarm system shall comply with all requirements of currently adopted version of NFPA 72.

B. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship. Contractors unfamiliar with the District's standards shall familiarize themselves with the District's standards and requirements prior to beginning work.

C. For new building construction on an existing campus – provide and install all components and accessories as outlined in the design documents for a complete and operable system that extends and seamlessly integrates into the existing campus' Fire Alarm system.

D. For construction in existing buildings - provide and install all components and accessories as outlined in the design documents to modify the existing system while maintaining code compliance and to seamlessly integrate the new components into the existing campus' Fire Alarm system. Prior to beginning any work, the Contractor is responsible for identifying any existing system errors or faults and bring these issues to the attention of the District's representative.

E. Labor and Materials: The Contractor shall provide and pay for all labor, materials, equipment, tools, utilities, construction equipment and machinery, transportation and other facilities and services necessary for the proper execution, operation, and completion of the Work

F. Contractor shall furnish and install all new conduit/raceway and wire as indicated on the project drawings and/or as required to provide a turn-key system to the District.

G. The Contractor shall be responsible for programing of all Fire Alarm Control Panel(s) (FACP) site wide.

H. With one-week notice the Contractor shall coordinate with the District's representative staff for monitoring connectivity.

I. Prior to final programming the contractor shall review the proposed final system programming, functionality and expectations with the District's representative. If the system is programmed without approval, all subsequent requested programming changes by the District's representative will be at the Contractor's expense.

J. After completion of the installation and 100% pretest of the system, a satisfactory final test (compliant with NFPA 72 requirements) of the entire system shall be made in the presence of the inspector of record (IOR) and the District's representative.

K. Provide the District's representative with an electronic copy of final test results.

L. Existing system shall remain operable until new system is accepted and approved by the IOR and the District's representative.

M. The Contractor is responsible for user/operator training (2 hours).

N. The Contractor shall complete all required project closeout documentation in a timely fashion.

O. A single speaker/strobe notification appliance may be used for both Fire alarm and CO detection notification. However, the device shall NOT have the word "FIRE" and requires a distinct temporal (3 or 4) coding with distinct voice notification (see DSA IR 9-2 for more information).

P. Integration with the site Intercom system for fire alarm activation notification.

1.03 RELATED REQUIREMENTS:

A. Division 01 – General Requirements

B. Division 26 – Electrical

C. Section 27 00 00 – Communications

D. Section 27 05 00 – Common Work Results for Communication Systems

1.05 CODES AND STANDARDS:

A. The installed system shall conform to all California State Codes

1. 2025 California Building Code (CBC)
2. 2022 California Electrical Code (CEC)
3. 2022 California Fire Code (CFC)
4. All equipment shall have California State Fire Marshall listing(s)
5. DSA IR 9-1 Emergency Voice/Alarm Communication Systems
6. DSA IR 9-2 Carbon Monoxide Detection Requirements for Group E Classrooms and Group I-4 Occupancies

B. National Fire Protection Association (NFPA) - USA:

1. 2020 NFPA 70 - National Electric Code (NEC)
2. 2022 NFPA 72 - National Fire Alarm Code (NFPA 72)
3. 2021 NFPA 101 - Life Safety Code (NFPA 101)
4. Americans with Disabilities Act (ADA)

C. Local building codes

D. All requirements of the Authority Having Jurisdiction (AHJ)

1.06 UNDERWRITERS LABORATORY (UL) LISTING

A. All equipment shall be UL listed for its intended purpose.

B. Any modification that voids the equipment's UL listing is strictly prohibited (i.e. relocated or oversize knock-outs).

C. Any modified new equipment that voids the UL listing shall be replaced by the Contactor (parts and labor) at their expense.

1.07 QUALIFICATIONS:

A. The Contractor shall possess a California C10 license.

B. The installation Contractor or Subcontractor shall be FACP manufacturer authorized to provide and install equipment with 5 years of documented experience.

C. The programming technician shall possess a valid manufacturer's programming certification.

D. The Contractor shall have at least one NICET certified in Fire Alarm Technology, level II (or greater) personnel as the on-site supervising technician who is always on site when Fire Alarm activities are taking place.

E. The installation company and its subcontractors shall have an office located within 50 miles of the project site.

1.07 REFERENCES

A. See Section 27 00 00

1.08 SYSTEM REQUIREMENTS

A. Site Compatibility

1. Any new installations or modifications to an existing system shall seamlessly integrate into the site's existing Fire Alarm system.

1.09 CONTRACTOR “SHOP DRAWINGS” DESIGN REQUIREMENTS

A. See Section 27 00 00 for requirements.

B. Shop Drawings are required for this project.

1.10 SUBMITTALS

A. See Section 27 00 00 for requirements.

B. Provide copies of certificates listed in the QUALIFICATIONS section above.

1.11 WARRANTY

A. Refer to Division 01 Warranty section.

B. After the satisfactory completion letter has been received, a continuous and fault free thirty (30) day “burn-in” period shall begin. Any fault shall reset the “burn-in” period to zero (0). Warranty shall commence at day 31 of a successful and continuous “burn-in” period.

PART 2 – PRODUCTS

2.01 EQUIPMENT AND MATERIAL, GENERAL:

A. The District preferred fire alarm control panel manufacturers are FireLite for Elementary and Notifier for Middle and High Schools.

B. See Appendix A for pre-approved equipment listings.

C. All products shall be new and unused and shall be of manufacturer's current and standard production.

D. Where two or more equipment items of the same kind are provided, all shall be identical and provided by the same manufacturer.

E. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory system operation.

F. Product availability:

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.

2. Certain products specified may only be available through factory authorized dealers and distributors. The Contractor shall verify his ability to procure the products specified prior to submitting a proposal.

G. In compliance with DSA IR 9-2 for CO Detection, in areas where CO detection is needed EVAC notification appliances will be utilized for Fire Alarm and Carbon Monoxide alerts, promoting a building wide evacuation. For this reason, interior notification appliances (Speaker/Strobes) shall not have the word “FIRE” on the device.

2.02 CONDUIT AND RACEWAY

A. See Section 27 05 00 for conduit and raceway requirements.

2.03 WIRE AND CABLE

A. Provide all new wire and cable required to install systems as indicated on design documents or approved shop drawings.

B. Approved wire and cable manufacturer is West Penn, substitutions require prior approval.

C. All cable shall be jacketed, and jacket color shall be red (OSP cable excluded). No THHN/THWN allowed.

D. All cables shall be specifically designed for their intended use and install requirements (FPL, plenum, direct burial, aerial, etc.).

E. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG solid for initiating device circuits and signaling line circuits, 12 AWG stranded for notification appliance circuits and 14 AWG stranded for emergency voice communication circuits. (Coordinate with wire schedule)

2.05 BATTERIES

A. Shall be new 12-volt, sealed lead-acid type.

B. Battery shall be sized according to calculations on design drawings.

C. Approved battery manufacturer: Powersonic or approved equal

2.06 EXTRA STOCK:

A. For projects with less than 10 new Fire Alarm devices – no extra stock required.

B. For projects with 11 – 50 new Fire Alarm devices – provide extra stock of 1 (ea.) Smoke detector (current model), 1 (ea.) Heat detector (current model) and 1 (ea.) Pull station (current model)

C. For projects over 50 new Fire Alarm devices – provide extra stock of 2 (ea.) Smoke detector (current model), 1 (ea.) CO detector (current model), 1 (ea.) Wall speaker/strobe (current model) and 1 (ea.) Ceiling speaker strobe (current model) per 100 Fire Alarm device increments.

D. For projects over 300 new Fire Alarm devices – provide devices listed in sections C (above) plus 1 (ea.) Power Booster (current model)

PART 3 – EXECUTION

3.01 INSTALLATION:

A. The installing company shall employ a minimum of one National Institute for the Certification in Engineering Technologies (NICET) Fire Alarm Systems, level II technician. To ensure system integrity, the NICET level II technician shall be on site during all fire system related work to guide the installation of conduit, back-boxes, device placement, device installation, programming, pre-testing, and final testing of the system.

B. The District's representative and/or Inspector of Record (IOR) shall have the authority to stop work until the certified personnel requirement is met. The Contractor shall be held accountable for meeting completion dates.

C. Installation shall be in accordance with the CBC, CEC, CFC, NFPA 72, local and national codes.

D. Fire Alarm cables shall not be installed in decking flutes as pathway. Any conduit that needs to be located in decking flutes needs to be rigid.

E. All Fire Alarm cables shall be run unexposed (not observable from occupiable space) throughout the entire cable path – either in conduit, on ladder racking, on J-hooks above ceilings or below flooring. Cable runs on J-hooks shall be perpendicular/parallel to building structure – no diagonal runs.

F. All fire devices and panels shall be mounted at the heights indicated on the design plans and shall comply with local, CBC, CEC, CFC, and NFPA 72 codes and standards. Any code discrepancies shall be brought to the Designer/Engineer and District's representative attention.

G. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place with fasteners and supports in accordance with drawings and specifications.

H. Signal line circuits (SLC) for initiating devices shall be wired Class B.

I. Notification appliance circuits (NAC) shall be wired Class B.

J. CO detection to initiate a building-wide evacuation in accordance with DSA IR 9-2.

K. Smoke detectors shall remain covered until operational. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and/or physical damage and may require additional testing and/or replacement.

L. All addressable smoke or heat devices shall have point-id labels (see 3.02 LABELING).

M. All modules with indicator lights (i.e., Monitor Modules & etc.) shall be mounted where the indicator lights are observable from the occupiable space.

N. Smoke relief hatches are to have door contacts installed and monitored with a monitoring module. The opening of the hatch shall produce a Supervisory event notification. Monitoring module height is to be 10’ AFF or less.

O. Fire alarm circuits shall have a red breaker lock on device per NFPA 72 requirements.

P. All modifications to electrical power shall be made by a licensed electrician.

Q. Headend FACP and associated equipment layout per design documents. If no layout exists Contractor to notify and receive guidance from the District’s representative prior to install.

R. All Duct Smoke Detector / Fire Smoke Damper shutdown to be coordinated with Div 23.

S. The contractor will coordinate with the District’s representative in writing for any needed information (i.e. IP addresses, etc.) at least 4 weeks prior to date the information is needed.

3.02 LABELING

A. The Contractor shall verify all room numbers against the approved signage submittal prior to labeling.

B. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

C. Device ID Labels are to be 1/4” lettering for mounting heights 10’ AFF or less, 1/2" black lettering on white labels for mounting heights greater than 10’ AFF.

D. All panels and power supplies shall be labeled indicating AC electrical power panel and circuit breaker number and panel location.

E. All panels and power supplies shall be identified per design plans.

F. All smoke and heat detectors shall be labeled with Point ID affixed to the trim skirt. Labels are to be visible when approaching the device from the room entry.

G. All modules are to be labeled with Point ID and function and/or associated equipment (i.e., FAN SHUTDOWN, HVAC UNIT XX, ATTIC HEAT, etc.)

H. All notification devices shall be labeled with NAC Point ID.

I. All cables in cabinets shall be labeled with function and circuit ID.

J. All end-of-line devices shall have a “EOL” label.

3.03 PANEL PROGRAMMING/SOFTWARE MODIFICATION

A. Correct room numbering is critical for configuration/programming and labeling shall match room signage. The Contractor shall verify all room numbers against the approved signage submittal prior to configuration/programming.

B. The contractor shall review the proposed system programming, functionality, expectations with the District’s representative 10 days prior to final programming.

C. The Contractor shall provide the services of a factory trained, and authorized technician to perform all system software modifications, upgrades, or changes on site. No remote programming is allowed.

D. The Contractor shall provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system.

E. Programming syntax shall be consistent with the existing site for label text and numbering scheme.

3.04 PRE-TESTING

A. The entire system shall be checked and pre-tested by the Contractor and shall test free of all faults prior to calling for a final test.

B. Before energizing the cables and wires, check for correct connections and test for open circuits, short circuits, ground faults, continuity, and any physical damage to the cable/wire insulation that may have occurred during installation.

3.05 TESTING AND GUARANTEE

A. Upon completion of the installation of the system, a test consisting of 100% of all newly installed and 10% of existing relevant system components shall be performed to confirm operation and function. This test shall be done in the presence of the Inspector of Record (IOR) and the District’s representative.

B. Provide the District’s representative with 7 days in advance written notice of system readiness for Final Testing and Inspection. The system shall be 100% pre-tested and fully operable with no trouble conditions prior to final test.

C. Provide the service of a NICET level II technician to supervise and participate in all of the adjustments and/or testing of the system.

D. Testing and adjustments – the Contractor shall:

1. Verify that all devices operate per Design documents matrix (matrices).
2. Verify the Point IDs and descriptions as indicated on the updated (redlined) Design Documents Floor Plan.
3. Verify the candela settings of all NAC devices with strobes.

4. Verify the intelligibility for all EVAC notification appliance speakers.
5. Verify and document that sound levels at all EVAC notification appliance speakers meet or exceeds the minimum sound levels as indicated in the design drawings for expected average ambient or maximum sound levels. Testing to be conducted using dBA setting, 5’ above finished floor and 10’ from speaker with a stand-alone meter (Galaxy Check Mate series or equal).
6. Contractor to adjust speaker wattage settings as required to meet sound levels required after testing.
7. Verify proper alarm and trouble of all sprinkler system flow valve(s).
8. Verify that an open circuit on the initiating device circuit activates a trouble signal locally for all circuits.
9. Verify that an open or a short circuit on the signaling line circuit activates a trouble signal locally for all circuits.
10. Verify that an open or short circuit on the notification appliance circuit activates a trouble signal locally for all circuits.
11. Verify that a ground condition on an initiating device circuit activates a trouble signal locally for all circuits.
12. Verify that a ground condition on a signaling line circuits activates a trouble signal locally for all circuits.
13. Verify that a ground condition on a notification appliance circuit activates a trouble signal locally for all circuits.

3.06 DEMOLITION

A. See section 27 05 00, for requirements

3.07 FINAL DOCUMENT SUBMITTALS

A. See section 27 00 00, for additional requirements

B. Submit completed NFPA certification forms as found in NFPA 72. Forms shall be submitted in typewritten format.

C. Provide the District’s representative with an electronic copy of final test results.

D. Contractor “red-line as-built” drawings shall also include the following: The drawings shall depict, at a minimum, the following conditions:

1. The device exact installed location.
2. Device updated labeling ID(s), which shall match the physical label at the device.
3. Revised risers to match record set point to point installation and
4. Updated battery calculation with quantity of device changes.
5. New pathways, conduit, ground boxes, junction boxes, raceway, power-poles and floor-monuments.
6. Any other new conditions.

E. The Contractor shall submit “red-line as-built” drawings as indicated on project schedule.

F. Warranty:

1. Refer to Division 01 Warranty section.
2. After the satisfactory completion letter has been received, a continuous and fault free thirty (30) day “burn-in” period shall begin. Any fault shall reset the “burn-in” period to zero (0). Warranty shall commence at day 31 of a successful and continuous “burn-in” period.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Fire Alarm Control Panel	**Fire-Lite**	**ES-1000X 954-PT**
Voice EVAC Control Panel	**Fire-Lite**	**ECC-50/100**
Remote Fire Annunciator	**Fire-Lite**	**LCD-80F**
Smoke Detector	**Fire-Lite**	**SD365**
Heat Detector (Rate of Rise)	**Fire-Lite**	**H365R**
Heat Detector (Non-	**System Sensor**	**5602**

addressable)		
CO Detector	**Fire-Lite**	**SD355CO**
Pull Station	**Fire-Lite**	**BG-12LX**
Monitor Module (Single)	**Fire-Lite**	**MMF-300**
Monitor Module (Dual)	**Fire-Lite**	**MDF-300**
Monitor Module (Mini)	**Fire-Lite**	**MMF-301**
DACT	**Fire-Lite**	**DACT-UD2**
Remote Amplifier	**Fire-Lite**	**ECC-50DA**
Remote Microphone	**Fire-Lite**	**ECC-RM**
Booster Power Supply	**Fire-Lite**	**FCPS-24FS6**
Horn/Strobe (Wall)	**System Sensor**	**P2RL**
Horn/Strobe (Ceiling)	**System Sensor**	**PC2RL**
Horn (Outdoor)	**System Sensor**	**HRK**
Speaker/Strobe (Wall)	**System Sensor**	**SPSRL**
Speaker/Strobe (Ceiling)	**System Sensor**	**SPSCRL**
Speaker (Outdoor)	**System Sensor**	**SPRK**
Duct Smoke Detector	**System Sensor**	**D4120**
Test Switch	**System Sensor**	**RTS-151-KEY**
Terminal/Barrier Strip	**Ideal Industries**	**89-608**
Dry Contact Input Relay	**Functional Devices, Inc.**	**RIB01BDC**
Fire Alarm Control Panel	**Notifier**	**NFS2-3030**
Voice EVAC Control Panel	**Notifier**	**NFC-50/100**
Smoke Detector	**Notifier**	**FSP-951**
Heat Detector (Rate of Rise)	**Notifier**	**FST-951**
CO Detector	**Notifier**	**FSCO-951**
Smoke/CO Detector	**Notifier**	**FCO-951**
Pull Station	**Notifier**	**NBG-12LX**
Monitor Module	**Notifier**	**FMM-1**
Monitor Module (Mini)	**Notifier**	**FMM-101**
Control Relay	**Notifier**	**FRM-1**
Isolator Module	**Notifier**	**ISO-X**
Remote Power Supply	**Notifier**	**PSE-6**

Heat Detector (194°/Rate of rise, Conventional)	**System Sensor**	**5602**
Heat Detector (194°/Rate of rise, Conventional) mounting plate	**Potter/Thermotech**	**302-194, AP-P**
Heat Detector (135°/Rate of rise, Conventional Threaded)	**Potter/Thermotech**	**302ET-135**
Universal Dual Path Communicator	**Bosch**	**B465**
Cellular Dialer	**Telguard**	**TG-7FM**

END OF APPENDIX A

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

2. Section 01 50 00, Construction Facilities and Temporary Controls.

3. Section 01 57 13, Erosion Control

4. Section 31 23 33, Trenching and Backfilling.

5. Section 32 12 00, Asphalt Concrete Paving.

6. Section 32 16 00, Site Concrete.

7. Section 32 80 00, Irrigation.

8. Section 32 90 00, Landscaping.

9. Section 33 40 00, Site Drainage.

10. Section 31 32 00, Soil Stabilization

1.02 SUBMITTALS

A. Refer to Section 01 33 00.

B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

1.03 QUALITY ASSURANCE

A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.

B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

C. The representatives of the Owner’s testing lab will not act as supervisor of construction, nor will they

direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting of inadequate compaction or moisture content is the sole responsibility of the contractor.

D. Tests (See Part 3 for Compaction Testing).

E. Contractor shall be solely responsible for all subgrades built. Failures resulting from inadequate compaction or moisture content are the responsibility of the contractor. Contractor shall be solely responsible for any and all repairs.

1.04 WARRANTY

A. Refer to General Conditions and Section 01 78 36.

1.05 REFERENCES AND STANDARDS

A. General: Site survey, included in the drawings, was prepared by _____, dated _____, and is the basis for data regarding current conditions. While the survey is deemed generally accurate, there exists discrepancies and variations due to elapsed time, weather, etc. Existing dirt grades may vary 0.2 ft. from that shown.

B. Geotechnical Engineering Report was prepared by _____. Report is entitled _____, and is on file with Architect. Recommendations of the Goetechnical report were used to develop the contract plans and specifications. The Geotechnical report shall be used as a reference for the soil condition of the project site. The design information contained in the contract plans and specifications shall govern over the recommendation of the Geotechnical report.

C. Site Visitation: All bidders interfacing with existing conditions shall visit the site prior to bid to verify general conditions of improvements. Discrepancies must be reported prior to the bid for clarification.

D. ANSI/ASTM D698-e1 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

E. ANSI/ASTM D1556-e1 - Test Method for Density of Soil in Place by the Sand-Cone Method.

F. ANSI/ASTM 698-12e2 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

G. ANSI/ASTM D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).

H. ANSI/ASTM D 4318-10e1 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

I. CALTRANS Standard Specifications Section 17.

J. CAL-OSHA, Title 8, Section 1590 (e).

K. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

1.06 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.07 PROJECT CONDITIONS

A. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

B. Excavation dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for excavation dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

C. [Add following if Mehrten is noted in soils report] Mehrten Formations are present on site at varying depths. Contractor shall anticipate the use of earthmoving equipment capable of removing and processing Mehrten Formations. The use of a Cat D10N with single tooth ripper and an excavator CAT 330D L shall be anticipated for the grading and excavation operations of this project.

1.08 EXISTING SITE CONDITIONS

A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.09 [Use following if working on existing site] ON SITE UTILITY VERIFICATION AND REPAIR PROCEDURES

A. Ground-breaking requirements:

1. All underground work performed by a Contractor must be authorized by the District's Construction Manager or the Low Voltage Consultant prior to start of construction.
2. The Contractor is to obtain and keep the original School's construction utility site plans on site during all excavation operations. Contractor can contact the District's Construction Manager, Facilities Manager, or the Low Voltage Consultant to procure the drawings.

B. Underground Utility Locating:

1. The contractor shall hire an Underground Utility Locating Service to locate existing underground utility pathways in areas affected by the scope of work for excavation.

2. Contractor must use an underground utility locator service with a minimum of 3 years' experience. The equipment operator must have demonstrated experience.
3. The Underground Utility Locator Service must have the use of equipment with the ability to locate by means of inductive clamping, induction, inductive metal detection, conductive coupling, or TransOnde (Radio detection) to generate signals, passive locating (free scoping) for "hot" electric, and metal detector.
4. The Underground Utility Locator Service must be able to locate existing utilities at a depth of at least 72".
5. The Underground Utility Locator Service must be able to locate but are not limited to locating the following types of utility pathways:
   a) All conduit pathways containing 110 volt or greater 50-60Hz electrical wire.
   b) All conduit pathways containing an active cable TV system.
   c) All conduit pathways containing wire or conductor in which a signal can be attached and generated without damaging or triggering the existing systems.
   d) All empty conduit pathways or pipe in which a signal probe or sonde (miniature transmitter) can be inserted.
   e) All conduit pathways containing non-conductive cables or wires in which a signal probe or sonde (miniature transmitter) can be inserted.
   f) All plastic and other nonconductive water lines in which a TransOnde Radio detection) or other "transmitter" can be applied to create a low frequency pressure waive (signal) without damaging or triggering the existing systems.
   g) All copper or steel waterlines and plastic or steel gas lines
6. All markings made by the Underground Utility Locator Service or other shall be clear and visible.
7. The contractor shall maintain all markings made by Underground Utility Locator Service or other throughout the entire length of the project.
8. The Underground Utility Locator Service shall provide the contractor with two sets of maps showing the location of utilities and average depth. They will be referenced to permanent buildings. Contractor will deliver one copy to the district at no additional charge.
9. Contractor is responsible to contact Underground Service Alert (U.S.A. 800/227-2600) and receive clearance prior to any excavation operations.
10. Contractor shall inform the (District's Construction Manager) (Architect) (Owner) no later than five (5) days prior to the date scheduled for the utility locator service to be on site.

1.10 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the

construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

H. [Adjust the following to meet environmental requirements] ENVIRONMENTAL PROTECTION

1. No ground-disturbing activities shall be allowed outside of the project construction boundary. Construction fencing shall be placed at the boundary of the project site to clearly mark the limits of ground-disturbing activities.
2. All project-related traffic shall be restricted to designated access roads, routes, and construction areas within the project boundary. No vehicular or pedestrian traffic shall be allowed outside the designated project boundary.
3. Prior to initiation of any site preparation/construction activities, a USFWS-approved biologist will conduct an education and training session for all construction personnel. The training program will instruct workers on the life history and ecology of vernal pool crustaceans, requirements to avoid damaging the crustaceans and their habitat (vernal pools/seasonal wetlands), and the possible penalties for not complying with these requirements.
4. To prevent sediment, hazardous materials, and other pollutants from washing or running off into the vernal swale and vernal pools outside of the project site, the contractor shall implement best management practices as identified in a Storm Water Pollution Prevention Plan (SWPPP).
5. Dirt roadways or other areas of disturbed bare ground within 100 feet of elderberry shrubs will be watered at least twice a day to minimize dust emissions.
6. A worker awareness training program for construction personnel will be conducted by a qualified biologist prior to beginning construction activities. The program will inform all construction personnel about the life history and status of the beetle, requirements to avoid damaging the elderberry plants, and the possible penalties for not complying with these requirements. Written documentation of the training will be submitted to USFWS within 30 days of its completion.
7. Contractor to avoid and protect all protected species.

1.11 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

B. Excessively wet fill material shall be bladed and aerated per section 3.08, B.

1.12 TESTING

A. General: Refer to Section 01 45 00 – Quality Requirements.

B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and back charged to Contractor.

1. If Contractor elects to process or mine onsite materials for use as Suitable Fill, Aggregate Sub Base, Aggregate Base, Rock, Crushed Rock or sand the cost of all testing of this material shall be paid for by the Contractor.
2. Testing of import fill for compliance with Department of Toxic Substance Control (DTSC) shall be paid for by the Contractor.

1.13 ARCHEOLOGICAL AND CULTURAL RESOURCES

A. If archeological or cultural resources are discovered during the Work, the Contractor must cease all construction operations in the vicinity of the discovery until a qualified archeologist can assess the value of these resources and make recommendations to the State Historic Preservation Officer. Archeological and cultural resources include artifacts, large amounts of bone, shell, or flaked stone, and other evidence of human activity. If the State Historic Preservation Officer or the Owner directs that work be temporarily ceased at the location of an archeological or cultural find, the Contractor must temporarily suspend work at the location.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Engineered Fill Materials: All fill shall be of approved local materials supplemented by imported fill if necessary. "Approved" local materials are defined as local soils tested and approved by Geotechnical Engineer free from debris, and concentrations of clay and organics; and contain rocks no larger than ___-inches in greatest dimension. The soil and rock should be thoroughly blended so that all rock is surrounded by soil. This may require mixing of the soil and rock with a dozer prior to placement and compaction. Clods, rocks, hard lumps or cobbles exceeding __-inches in final size shall not be allowed in the upper ___ inches of any fill. Native clay or clayey soils will not be permitted within the upper ___ inches of building pad areas or paved areas.

B. Imported Engineered Fill Material: Imported fill may be required to complete work. Proposed import fill material shall meet the above requirements; shall be similar to the native soils. Import fill shall meet the above requirements; shall have plasticity index of 12 or less; an Expansion Index of 20 or less; be free of particles greater than ___-inches in largest dimension; be free of contaminants and have corrosion characteristics within the acceptable limits. <u>All import fill material shall be tested and approved by Soils Engineer prior to transportation to the site.</u> Proposed fill material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.

1. DTSC TESTING: Site work contractor is to coordinate testing with an analytical lab, hired by the owner, licensed by the State of California for the DTSC testing. The costs associated with the testing will be paid by the contractor.
2. DTSC testing shall include documentation as to the previous land use, location, and history. Soils shall be analyzed for all compounds of concern to ensure the imported soil is uncontaminated and acceptable. Testing shall be performed per the recommendations included in DTSC Imported Fill Advisory http://www.dtsc.ca.gov/Schools/upload/SMP FS Cleanfill-Schools.pdf). Soils shall be tested prior to import to the project site.
   Lab shall determine geographically which tests and analysis comparison will be appropriate for the testing. (CAM 17 / Title 22); (RWQCB) Regional Water Quality Control Board; or (OEHHA) Office of Environmental Health Hazard Assessment.
3. Frequency of testing shall be conducted in accordance with DTSC's Imported Fill Advisory as follows;

   Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 Acres or less	Minimum of 4 samples
2 to 4 Acres	Minimum of 1 sample every ½ Acre
4 to 10 Acres	Minimum of 8 Samples
Greater than 10 Acres	Minimum of 8 locations with 4 subsamples per location

   Volume of Borrow Area Stockpile

Up to 1,000 Cubic Yards	1 sample per 250 cubic yards
1,000 to 5,000 Cubic Yards	4 samples for the first 1000 cubic Yards + 1 sample per each additional 500 cubic yards
Greater than 5,000 Cubic Yards	12 samples for the first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

4. Reports/ Documentation

   a. Results of the testing analysis shall be sent to the Owner; Architect; Project Inspector, Project Civil Engineer, DTSC, and DSA. Letter shall reference DSA file and application numbers.

C. Landscape Backfill Material:

1. The top ___" of native topsoil stripped from the site may be used for landscape backfill material provided it meets the requirements as specified in Section 329000.
2. Imported Topsoil may be required to complete work. See Section 329000 for requirements. Proposed Topsoil material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.

D. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.

E. Aggregate Base: Provide Class 2 3/4" Aggregate Base conforming to standard gradation as specified in Cal Trans Standard Specifications, Section 26,-1.02A.

F. Decomposed Granite: Decomposed Granite shall be well graded mixture of fine to 1/8" particles in size with no clods. The material shall be free of vegetation, other soils, debris and rock. The material shall be reddish-tan to tan in color.

G. Decomposed Granite Solidifier: PolyPavement or equal.

PART 3 – EXECUTION

3.01 INSPECTION LAYOUT AND PREPARATION

A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point where this installation may properly commence

B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.

C. Verify that specified items may be installed in accordance with the approved design.

D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PERFORMANCE

A. GENERAL:

1. General: Do all grading, excavating and cutting necessary to conform finish grade and contours as shown. All cuts shall be made to true surface of subgrade.
2. Archaeological Artifacts: Should any artifacts of possible historic interest be encountered during earthwork operations, halt all work in area of discovery and immediately contact the Architect for notification of appropriate authorities.
3. Degree of Compaction: Percentage of maximum density, hereinafter specified as degree of compaction required, means density equivalent to that percentage of maximum dry density determined by ASTM D1557 Compaction Test method, and such expressed percentage thereof will be minimum acceptable compaction for specified work.
4. Moisture Content: Moisture content shall be as noted below and as called for on the plans. Moisture content shall be maintained until subgrade is covered by surfacing materials.

3.03 DEMOLITION, DISPOSAL AND DISPOSITION OF UNDESIRABLE MAN-MADE FEATURES

A. All other obstructions, such as abandoned utility lines, septic tanks, concrete foundations, and the like shall be removed from site. Excavations resulting from these removal activities shall be cleaned of all loose materials, dish shaped, and widened as necessary to permit access for compaction equipment.

Areas exposed by any required over-excavation should be scarified to a depth of ____", moisture-conditioned to (optimum) (2% above optimum) moisture content, and recompacted to at least ____% of the maximum dry density.

3.04 TESTING AND OBSERVATION

A. All grading and earthwork operations shall be observed by the Geotechnical Engineer or his representative, serving as the representative of the Owner.

B. Field compaction tests shall be made by the Geotechnical Engineer or his representative. If moisture content and/or compaction are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified moisture or compaction. Notify Geotechnical Engineer at least 48 hours in advance of any filling operation.

C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer or his representative. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.

D. If the Contractor should fail to meet the compaction or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer or Architect/Engineer.

E. After each rain event Geotechnical Engineer shall test fill material for optimum moisture. Do not place any fill material until desired moisture is achieved.

3.05 CLEARING AND GRUBBING

A. Prior to grading, remove all debris off-site. Remove trees and brush including the root systems. Holes resulting from tree and brush removal should be prepared and backfilled in accordance with paragraphs 3.07, 3.08, 3.09, and 3.10. This may require deepening and/or widening the holes to adequately remove disturbed soil and provide room for compaction equipment. Strip the surface of all organics. Stripping's meeting the requirements of Section 32 90 00 may be used in landscape areas only.

3.06 CUTTING

A. Building pads that are located within a cut/fill transition area will have to be overexcavated to provide a semi-uniform fill beneath the building pad. The portions of building pads located in cut areas shall be overexcavated to provide no more than ___ foot difference in fill placed in the same building pad.

B. Do all cutting necessary to bring finish grade to elevations shown on Drawings.

C. When excavation through roots is necessary, cut roots by hand.

D. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

3.07 STRUCTURAL EXCAVATION

A. General: Excavate to bear on firm material at contract depth shown on Structural Drawings.
B. Footings: All footing excavations shall be of sufficient width for installation of formwork, unless earth will retain its position during concreting. All portions of footings above grade must be formed.

C. Unsuitable Ground: Any errors in structural excavation, soft ground, or clay soils found when excavating shall be reported to Architect. In no case shall work be built on any such soft or clayey unsuitable surface without direction from the Architect. Restore excavations to proper elevation with engineered fill material compacted to 90% of dry density.

3.08 SUBGRADE PREPARATION

A. Grade compact and finish all subgrades within a tolerance of 0.10' of grades as indicated on Drawings and so as not to pool water. Subgrade within building pads and concrete walks shall be within 0.05' of grades indicated.

B. After clearing, grubbing and cutting, subsurface shall be plowed or scarified to a depth of at least ___", until surface is free from ruts, hummocks or other uneven features and uniform and free from large clods. Moisture condition to (optimum) (2% above optimum) moisture content and recompact to at least ___% of the maximum dry density as determined by ASTM Test Method D1557. If the existing soils are at a water content higher than specified, the contractor shall provide multiple daily aerations by ripping, blading, and/or disking to dry the soils to a moisture content where the specified degree of compaction can be achieved. After seven consecutive working days of daily aerations, and the moisture content of the soil remains higher than specified, the contractor shall notify the architect. If the existing soils have a moisture content lower than specified, the contractor shall scarify, rip, water and blade existing soil to achieve specified moisture content. The contractor shall make proper allowance in schedule and methods to complete this work.

C. Subgrade in areas to receive landscaping shall be compacted to 90%.

D. Where Contractor over-excavates building pads through error, resulting excavation shall be recompacted as engineered fill at Contractor's expense.

E. [May not be necessary for all sites. Review soils report.] In building pad areas with cut/fill transitions or building pad areas, which are entirely in cut, overexcavate a minimum of ____ feet so that differential fill thickness does not exceed ____ feet over a horizontal distance of ____ feet.

3.09 PLACING, SPREADING AND COMPACTING FILL MATERIAL IN BUILDING PAD AND PAVEMENT AREAS

A. Selected fill material shall be placed in layers which, when compacted, shall not exceed 6 inches in compacted thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity in moisture content. [The following must be confirmed by Geotechnical Engineer] Compaction of rocky fill materials should be achieved by at least successive passes with a compactor or an equivalent self-propelled sheepsfoot compactor. Compactive effort should be applied uniformly across the full width of the fill. Large rocks that cannot be properly incorporated into the engineered fill should be removed.

B. Selected fill material shall be moisture-conditioned to specified moisture content. Selected fill material shall be unfrozen. When moisture content of fill material is below that specified, add water until proper

moisture content is achieved. When moisture content is above that specified, aerate by blading or other methods mentioned in 3.08 B until moisture content is satisfactory.

C. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to a minimum of 90% as determined by the ASTM D1557 Compaction Test. Compact each layer over its entire area until desired density has been obtained.

D. Recompaction of Fill in Trenches and Compaction of Fill Adjacent to Walls: Where trenches must be excavated, backfill with material excavated. Place in lifts that when compacted do not exceed 6", moisture conditioned to (optimum)(2% above optimum) moisture content, and compact to a minimum of 90% relative compaction in building pad and paved areas, and to 90% relative compaction in landscape areas.

E. Jetting of fill materials will not be allowed.

3.10 FINAL SUBGRADE COMPACTION

A. Building Pads: Upper ___" of all final building pad subgrades (including future buildings) shall be uniformly compacted at specified moisture content to at least ___% of maximum dry density, as determined by ASTM D1557 Compaction Test, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.

1. Exception; in lime /cement treated areas the upper __" shall be compacted to ____% Compaction.

B. Paved Areas: Upper ___" of all final subgrades supporting pavement sections and all other flatwork shall be brought to specified moisture content and shall be uniformly compacted to not less than ___% of maximum dry density, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.

1. Exception; in lime /cement treated areas the upper __" shall be compacted to ____% Compaction.

C. Other Fill and Backfill: Upper [Same depth as topsoil]" of all other final subgrades or finish grades shall be compacted to _____% of maximum dry density.

D. Gravel Fill: Do not place compacted gravel fill until after underground work and foundations are in place. Compact gravel fill with vibratory plate or similar equipment to preclude settlement.

3.11 PLACING, SPREADING, AND COMPACTION OF LANDSCAPE BACKFILL MATERIALS

A. All landscaped areas shall receive topsoil. After subgrade under landscape area has been scarified and brought to 90% maximum dry density, top soil shall be placed evenly to depth of ___" at 85% of maximum dry density.

B. Project Inspector must verify that materials are uniformly spread to minimum depth specified.

3.12 DECOMPOSED GRANITE COMPACTION AND STABILIZATION

A. Decomposed granite paving, paths or track shall be placed uniformly to the required depth and treated with PolyPavement or approved equal. Apply PolyPavement using Application Method 1 or a mixed application method.

3.13 SLOPE CONSTRUCTION

A. Cut slopes shall be constructed to no steeper than ___:___ (horizontal:vertical). Fill slopes shall be constructed to no steeper than ___:___ (horizontal:vertical). Prior to placement of fill on an existing slope the existing slope shall be benched. The benches shall be in a ratio of ___horizontal to ___vertical. The face of the fill slopes shall be compacted as the fill is placed, or the slope may be overbuilt and then cut back to the design grade. Compaction by track walking will not be allowed.

3.14 FINISH GRADING

A. At completion of project, site shall be finished graded, as indicated on Drawings. Finish grades shall be "flat graded" to grades shown on the drawing. Mounding of finish grades will not be allowed unless otherwise directed on the landscape drawings. Tolerances for finish grades in drainage swales shall be +-0.05'. Tie in new and existing finish grades. Leave all landscaped areas in finish condition for lawn seeding. Landscaped planters shall be graded uniformly from edge of planter to inlets. If sod is used for turf areas the finish grade on which it is placed shall be lowered to allow for sod thickness.

B. All landscape areas shall be left free of rock or foreign material as specified in Section 32 90 00.

C. All landscape areas shall be approved by Architect prior to any planting.

3.15 SURPLUS MATERIAL

A. Excavated material not required for grading or backfill shall be removed from site at contractor's expense.

3.16 CLEANING

A. Refer to Section 01 74 00.

B. Remove from fill all vegetation, wood, form lumber, casual lumber, and shavings, in contact with ground; buried wood will not be permitted in any fill.

END OF SECTION

SECTION 31 13 16

TREE PROTECTION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Tree protection: complete as shown and as specified.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 02 41 00 – SITE DEMOLITION.
3. Section 32 80 00 – IRRIGATION.
4. Section 32 90 00 – LANDSCAPING.

1.02 SUBMITTALS

A. Contractor shall submit Tree Protection Area plan to Architect outlining all trees and plants listed by number to be protected and their groupings. All trees and plants shall be grouped in their own Fenced Tree Protection Areas as shown in Drawings.

B. Contractor shall submit to Landscape Architect in writing a schedule including any and all activity inside Fenced Tree Protection Areas. This schedule to include but not limited to the dates fences are initially installed, altered and dates of fence replacement. Intent of these provisions is that the Tree Protection Zone (TPZ) are fenced for the entire duration with only exceptions of short intervals or specifically defined construction activity needs. Revise schedule as directed by Architect.

C. Provide a Mediation Plan to keep existing trees and planting irrigated during construction.

1.03 WARRANTY

A. Guarantee all workmanship and materials hereunder against defective workmanship and materials, including damage by leaks and settlement of irrigation trenches, for the duration specified in Division 01 of these Specifications. (The Contractor is not responsible for vandalism or theft after date of final acceptance.)

PART 2 – PRODUCTS

2.01 MATERIALS

A. Use materials as specified; any deviation from the Specifications must first be approved by the

Owner's Representative in writing. All material containers or certificates shall be clearly marked by manufacturer as to contents for inspection.

B. Trunk Protection constructed of:

1. 20-foot long 2x6 wood boards or length needed to protect the trunk if tree trunk is shorter than 20'.
2. Metal wire. Gauge strong enough to tie the boards around the trunk of the tree.

C. Tree Protection Zone Fencing:

1. 4-foot-tall snow fencing or 6-foot-tall metal chain link construction fencing per the discretion of the Landscape Architect or District Representative.

D. Bark Mulch: Untreated, shredded cedar.

PART 3 – EXECUTION

3.01 PREPARATION

A. Maintain pre-existing moisture levels.

B. Maintain areas inside the fenced tree protection area including lawn mowing, leaf removal, operation and repair of irrigation.

C. Protect root systems from flooding, erosion, excessive watering and drying resulting from dewatering or other operations:

D. Prohibitions - DO NOT:

1. Allow run off or spillage of damaging materials in vicinity of root systems,
2. Rinse tools or equipment under trees,
3. Store materials, stockpile soil, park or drive vehicles within drip lines or in areas with plants,
4. Cut, break skin or bark, bruise roots or branches,
5. Allow fires under and adjacent trees and plants,
6. Discharge exhaust under foliage,
7. Secure cable, chain, or rope to trees,
8. Change grade within drip line of trees without Landscape Architect's approval,
9. Lime shall not be used.

3.02 INSTALLATION

A. Tree Trunk Protection

1. Conform to requirements for trees and plants to be retained, per 3.01, above.
2. Install boards vertically around tree and bind together with wire to protect the bark 360 degrees around the entire tree prior to start of any demolition and construction. Boards

are not to dig into bark.

3. Major scaffold limbs may require plastic fencing or straw waddles to be wrapped around them to protect them.

B. Tree Dripline Protection

1. The Tree Protection Zone (TPZ) is a restricted area around the base of the tree with a radius of one foot (1’) for every inch of tree trunk diameter or ten feet, which is greater, enclosed by tree protection zone fencing.
2. Signage designating the protection zone and penalties for violations shall be secured in prominent location on each protection fence.

C. Requirements for Trees to be Protected

1. Duration: Tree protection shall be erected before demolition, grading, or any construction begins and remain in place until final inspection of the project.
2. Conform to requirements for trees and plants to be retained, per 3.01, above.
3. Architect shall give final review of Tree Protection before construction to begin. Revise schedule as directed by Architect.
4. Vehicle movement within the TPZ will only be allowed for construction equipment.

    a. Within dripline, apply 10-inch layer of mulch over geotextile fabric.

5. Perform trenching operations within the TPZ of the tree so that:

    a. Digging shall be by hand using narrow trenching shovel,
    b. No roots larger than 2" diameter are cut and utilities are routed around or below them,
    c. Roots smaller than 2" diameter are cut with sharp tools, saws, loppers- not torn, chopped or broken.

6. Where roots are exposed:

    a. Do not allow the roots to dry out,
    b. On the same day the excavation is made, provide temporary backfill to original grade at tree roots,
    c. Or cover roots with 4 layers of wet untreated burlap, made wet each day, including weekends.

7. Roots larger than 3" in diameter are not to be cut without review and approval of Arborist.

3.03 REPAIR/RESTORATION:

A. It shall be the responsibility of Contractor to repair or replace any damaged trees.

B. Repair trees damaged by operations:

1. within 24 hours of damage,
2. to satisfaction of Landscape Architect,

3. to ISA Pruning Standards.

C. Replace repaired trees where repair has not restored them to health or aesthetics:

1. within 6 months of request to replace,
2. to the satisfaction of Landscape Architect,
3. with replacement plants of a size and variety matching those that were removed

D. Replaced trees and plants shall be the responsibility of Contractor to maintain in good health and aesthetics for the duration of the project from installation.

1. Contractor shall submit to Landscape Architect comprehensive maintenance plan for replacement tree, including but not limited to provisions for irrigation system independent of existing system.

E. Where suitable replacement of trees and plants are not available:

1. Contractor shall provide affidavits to Landscape Architect that they are not available.
2. Contractor shall provide compensation to the State at the following rates:

a. $2000 for each caliper inch of any tree or plants removed under 12 inches.
b. $4000 for each caliper inch of any tree or plants removed 12 inches or more.
c. Caliper of trees and plants measured at 6 inches above grade.
d. Caliper defined here as thickness of diameter, measured in inches.

F. Soil Contamination:

1. Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense.

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SUMMARY

A. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 01 50 00, Construction Facilities and Temporary Controls.
3. Section 01 57 13, Erosion Control
4. Section 31 23 33, Trenching and Backfilling.
5. Section 32 12 00, Asphalt Concrete Paving.
6. Section 32 16 00, Site Concrete.
7. Section 32 80 00, Irrigation.
8. Section 32 90 00, Landscaping.
9. Section 33 40 00, Site Drainage.
10. Section 31 32 00, Soil Stabilization

1.02 QUALITY ASSURANCE

A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.

B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

C. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

1.03 SUBMITTALS

A. Refer to Section 01 33 00.

B. Submit Manufacturers data and shop drawings.

1.04 WARRANTY

A. Submit fully executed warranty for work and materials in this section per 01 78 36.

1.05 REFERENCES AND STANDARDS

A. California Building Code current edition.

B. California Plumbing Code current edition.

1.06 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.07 PROJECT CONDITIONS

A. Contractor shall acquaint himself with all existing site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

B. Field verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

C. Trench dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for trench dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

1.08 PROTECTION

A. Adequate protection measures shall be provided to protect workers and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations. Repair all trenches in grass areas with new sod (seeding not permitted) and "stake-off" for protection.

B. Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Architect or Owner is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. Keep all excavations free from water during entire progress of work, regardless of cause, source or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.

H. Trees: Carefully protect existing trees which are to remain.

1.09 TRENCH SAFETY PROVISIONS

A. General Contractor shall be solely responsible for safety design, construction and coordination with agencies having jurisdiction. If such plan varies from shoring system standards established by Construction Safety Orders, plan shall be prepared by registered civil or structural engineer.

B. Nothing herein shall be deemed to allow use of shoring, sloping or protective system less effective than that required by Construction Safety Orders of California State Division of Industrial Safety.

C. When trenching through paved surface, provide steel trench plates to cover open trenches daily until trenches are backfilled.

1.10 SEASONAL LIMITS

A. No backfill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, full operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

B. Material above optimum moisture shall be processed per section 310000, 3.08, B.

1.11 TESTING

A. General: Refer to Section 01 45 00 – Quality Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Backfill materials: Pipeline and conduit trench backfill as shown on the plans and as specified below.

1. ¾ inch crush rock.
2. Native Materials: Soil native to Project Site, free of wood, organics, and other deleterious substances. Rocks shall not be greater than __-inches.
3. Sand: Fine granular material, free of organic matter, mica, loam or clay.
4. Lean Mix Concrete/Controlled Density Backfill: 2 sacks cement slurry.
5. Class 2 aggregate base, ¾” rock, per Caltrans section 26-1.02B

B. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.

C. Provide other bedding and backfill materials as described and specified in Section 31 00 00, Section 33 40 00 and Divisions 15 and 16.

PART 3 – EXECUTION

3.01 INSPECTION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

3.02 COORDINATION

A. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.03 INSTALLATION

A. Perform work in accordance with pipe manufacturer's recommendations, as herein specified and in accordance with drawings.

3.04 TRENCHING

A. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of trench around installed item as required for caulking, joining, backfilling and compacting; not less than 12 inches wider than pipe or conduit diameter, unless otherwise noted.

B. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

C. Trench straight and true to line and grade with bottom smooth and free of edges or rock points.

D. Where depths are not shown on the plans, trench to sufficient depth to give minimum fill above top of installed item measured from finish grade above the utility as follows:

1. Sewer pipe: depth to vary
2. Storm drain pipe: depth to vary
3. Water pipe - Fire Supply: 36 inches
4. Water pipe – Domestic Supply: 30 inches

E. Where trench through existing pavement saw cut existing pavement in straight lines. Grind existing asphalt on each side of trench 3" wide x ½ the depth of the section. Apply tact coat to vertical surfaces before installing new asphalt. Replace asphalt and concrete pavement sections to matched existing conditions. In concrete pavement provide expansion and control joints to match existing joint layout.

3.05 BACKFILL

A. Pipe Trench Backfill is divided into three zones:

1. Bedding: Layer of material directly under the pipe upon which the pipe is laid.
2. Pipe Zone: Backfill from the top of the bedding to 6 inches (compacted) over the top of the pipe.
3. Upper Zone: Backfill between top of Pipe Zone and to surface of subgrade.

B. Bedding: Type of material and degree of compaction for bedding backfill shall be as defined in the Details and Specifications.

C. Pipe Zone and Upper Zone Backfill:

1. Type of material and degree of compaction Pipe Zone and Upper Zone Backfill shall be as required by Drawings, Details, & Specifications.
2. Upper Zone Backfill shall not be placed until conformance of Bedding and Pipe Zone Backfill with specified compaction test requirements has been confirmed.
3. Backfill shall be brought up at substantially the same rate on both sides of the pipe and care shall be taken so that the pipe is not floated or displaced. Material shall not be dropped directly on pipe.

D. Backfill Compaction:

1. Backfill shall be placed in layers which, when compacted shall not exceed 6 inches in thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity. Do not backfill over, wet, frozen or soft subgrade surfaces. Employ a placement method that does not disturb or damage foundation walls, perimeter drainage, foundation damp-proofing, waterproofing or protective cover.
2. When moisture content of fill material is below that required to achieve specified density, add water until proper moisture content is achieved. When moisture content is above that required, aerate by blading or other methods until specified moisture content is met, see section 310000, 3.08, B.
3. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to ____% of maximum dry density while at specified moisture content. Compact each layer over its entire area until desired density has been obtained.
4. The top ___ inches of subgrade compaction under pavement or building shall be per Earthwork section 31 00 00.
5. Compaction: All backfill operations shall be observed by the Inspector of Record and/or Geotechnical Engineer. Field density tests shall be made to check compaction of fill material. If densities are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified densities. Notify Inspector and Architect at least 24 hours in advance of any operation.

E. Backfill in Areas Previously Lime or Cement Treated

1. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base, with minimum section equal to the lime treated section and compacted to 95%.

3.06 TRENCH AND SITE RESTORATION

A. Finished surface of trenches shall be restored to a condition equal to, or better than the condition as existed prior to excavation work.

3.07 PROTECTION

A. Protect existing surfaces, structures, and utilities from damage. Protect work by others from damage. In the event of damage, immediately repair or replace to satisfaction of Owner.

B. Repair existing landscaped areas to as new condition. Replant trees, shrubs or groundcover with existing materials if not damaged or with new materials if required. Replace damaged lawn areas with sod, no seeding will be permitted.

C. Replace damaged pavement with new compatible matching materials. Concrete walks to be removed to nearest expansion joint and entire panel replaced. Asphalt to be cute neatly and replaced with new materials.

D. Any existing materials removed or damaged due to trenching to be returned to new condition.

3.08 SURPLUS MATERIAL

A. Remove excess excavated material, unused materials, damaged or unsuitable materials from site.

3.09 CLEANING

A. Refer to Section 01 74 00.

B. Contractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others throughout the project and at the completion of work.

C. After completion of work in this section, remove all equipment, materials, and debris. Leave entire area in a neat, clean, acceptable condition.

END OF SECTION

SECTION 31 32 00

SOIL STABILIZATION

(DESIGNER! FOR USE WITH LIME, LIME & CEMENT OR CEMENT)

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:

1. Description: Provide Lime/Cement Stabilization Treatment, including spreading andmixing lime and water with in-place materials, and compacting the mixture to the lines, grades and dimensions shown on the plans and/or specified.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

2. Section 01 50 00, Construction Facilities and Temporary Controls.

3. Section 31 23 33, Trenching and Backfilling.

4. Section 32 12 00, Asphalt Concrete Paving.

5. Section 32 16 00, Site Concrete.

1.02 SUBMITTALS

A. QUALITY ASSURANCE

1. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.

2. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

3. The representatives of the Owner’s testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner’s testing lab representatives nor the testing by the Owner’s testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

4. Tests (See Part 3 for Compaction Testing).

5. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate

compaction are the responsibility of the contractor.

6. Failures due to the lack of continuous moisture control during the curing period will be the sole responsibility of the contractor.

7. Any trenching through the finished cured lime/cement section will result in the contractor having to backfill trench with class 2 aggregate base rock, or cement/sand slurry,

1.03 SUBMITTALS

A. Refer to Section 01 33 00.

1.04 WARRANTY

A. Refer to General Conditions and Section 01 78 36.

1.05 QUALITY ASSURANCE

A. General: All Quality Assurance procedures specified on the drawings shall apply to this Section in addition to those shown below.

B. Testing:

0. Geotechnical Engineer: Owner is retaining a Geotechnical engineer to determine compliance of Lime/Cement Stabilization Treatment with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except that costs incurred for re-tests or re-inspection will be paid by Owner and back charged to Contractor.

C. Inspection: Work shall not be performed without the physical presence and approval of Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least two working days prior to commencement of any aspect of site earthwork.

D. Field Density: Field density and phenolphthalein reaction tests shall be made by the Geotechnical Engineer after completion of compaction. Where compaction equipment has disturbed the surface to a depth of several inches, density tests shall be taken in the compacted material below the disturbed surface.

1.07 SUBMITTALS

A. Weighmaster Certificates: Provide certificates as required in Section 2.01B.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lime/ Cement Treated Engineered Fill: The materials to be treated shall consist of on-site soils or approved import material as described in Section 31 00 00.

B. Lime/ Cement: Lime/ Cement in areas to be treated shall be lime cement. The percentage of lime shall be based on a soil weight of 100 pcf; hence, __ pounds lime cement should be utilized per square foot. A certification of compliance shall be submitted to the Geotechnical Engineer with each delivery of lime cement.

C. Water: Water shall be added during the preliminary mixing operations and, if necessary, during final mixing and to keep the cured material moist until curing is complete. The amount of water added shall be subject to the approval of the Geotechnical Engineer at all times.

PART 3 - EXECUTION

3.01 PREPARATION

A. General: Layout all work, establish grades, locate existing underground utilities, set markers and stakes, set up and maintain barricades and protection facilities; all prior to beginning actual earthwork operations.

3.02 EQUIPMENT

A. Lime Spreader: The lime/cement shall be spread by equipment which shall uniformly distribute the required amount of lime/cement. The rate of spread per square foot of blanket shall not vary more than 5 percent from the designated rate, unless otherwise approved by the Geotechnical Engineer.

B. Mixing Equipment: Mixing equipment shall be capable of mixing or remixing the materials to a uniform mixture free of streaks or pockets of lime/cement to the full required depth.

3.03 START OF WORK UNDER THIS SECTION

A. General: Prior to starting physical work under this Section, the property line is to be clearly staked and identified. No lime treated materials shall be allowed to contaminate areas outside of the property.

B. Utilities; Contractor is to engage with a licensed contractor specialized in the Utility Locating Business. The contractor shall locate any and all utilities and pothole the same. The frequency of potholing shall be enough to establish the elevations of all utilities located.

3.04 LIME SPREADING

A. Engineered Fill: Provide lime/cement treatment in areas shown on plans and extending a minimum distance of ___ feet from outside edge of curb, building footing, wood header, and to a depth of at least ___-inches.

B. Temperature: Lime shall not be spread while the atmospheric temperature is below 35 degrees Fahrenheit or when conditions indicate that the temperature may fall below 35 degrees Fahrenheit within 24 hours.

3.05 MIXING

A. Lime/cement shall be added to the material to be treated at a rate of __ pounds lime cement per square foot based on a soil unit weight of ___ pcf.

B. Lime/cement shall be spread by equipment that will uniformly distribute the required amount of lime/cement for the full width of the prepared material. The rate of spread per linear foot of blanket shall not vary more than five percent (__%) from the designated rate.

C. The spread lime/cement shall be prevented from blowing by suitable means selected by the Contractor. Quicklime shall not be used to make lime slurry. The spreading operations shall be conducted in such a manner that a hazard is not present to construction personnel or the public. All lime spread shall be thoroughly mixed into the soil the same day lime spreading operations are performed.

D. The distance which lime/cement may be spread upon the prepared material ahead of the mixing operation will be determined by the Geotechnical Engineer.

E. No traffic other than the mixing equipment and water truck will be allowed to pass over the spread lime/cement until after the completion of mixing. After mixing, grading and compacting are completed, only the water truck is allowed on the treated area to maintain the optimum moisture for curing.

F. Mixing equipment shall be equipped with a visual depth indicator showing mixing depth, an odometer or footmeter to indicate travel speed and a controllable water additive system for regulating water added to the mixture.

G. Mixing equipment shall be of the type that can mix the full depth of the treatment specified and leave a relatively smooth bottom of the treated section. Mixing and re-mixing, regardless of equipment used, will continue until the material is uniformly mixed free of streaks, pockets, or clods of lime/cement), and moisture is at approximately two percent (2%) over optimum and the mixture complies with the following requirements:

Minimum Sieve Size	Percent Passing
1-1/2”	100
1”	95
No. 4	60

H. Non-uniformity of color reaction when the treated material, exclusive of one inch or larger clods, as tested with the standard phenolphthalein alcohol indicator, will be considered evidence of inadequate mixing.

I. Lime/cement -treated material shall not be mixed or spread while the atmospheric temperature is below 35°F. The entire mixing operation shall be completed within seventy-two (72) hours of the initial spreading of lime, unless otherwise permitted by the Geotechnical Engineer.

3.06 SPREADING AND COMPACTING

A. The treated mixture shall be spread to the required width, grade and cross-section. The maximum compacted thickness of a single layer may be determined by the Contractor provided he can demonstrate to the Geotechnical Engineer that his equipment and method of operation will provide uniform distribution of the lime/cement and the required compacted density throughout the layer. If the Contractor is unable to achieve uniformity and density throughout the thickness selected, he shall rework the affected area using thinner lifts until a satisfactory treated subgrade meeting the distribution and density requirements is attained, as determined by the Geotechnical Engineer, at no additional cost to the Owner.

B. The finished thickness of the lime-treated material shall not vary more than five hundredths of a foot (0.05') from the planned thickness at any point.

C. The lime/cement -treated soils shall be compacted to a relative compaction of not less than _____ percent (__%) as determined by the ASTM D1557-01 Compaction Test.

D. Initial compaction shall be performed by means of a sheepsfoot type roller or a vibratory padfoot roller. Final rolling shall be by means of a smooth drum roller.

E. Areas inaccessible to rollers shall be compacted to meet the minimum compaction requirement by other means satisfactory to the Geotechnical Engineer.

F. Final compaction shall be completed within thirty-six (36) hours of final mixing. The surface of the finished lime/cement -treated material shall be the grading plane and at any point shall not very more than five hundredths of a foot (0.05') foot above or below the grade established by the plans.

G. Before final compaction, if the treated material is above the grade tolerance specified in this section, uncompacted excess material may be removed and used in areas inaccessible to mixing equipment. After final compaction and trimming, excess material shall be removed and disposed of off site. The trimmed and completed surface shall be rolled with steel or pneumatic-tired rollers. Minor indentations may remain in the surface of the finished materials so long as no loose material remains in the indentations.

H. At the end of each day's work, a construction joint shall be made in thoroughly compacted material and with a vertical face. After a part-width section has been completed, the longitudinal joint against which additional material is to be placed shall be trimmed approximately three inches (3") into treated material, to the neat line of the section, with a vertical edge. The material so trimmed shall be incorporated into the adjacent material to be treated.

I. An acceptable alternate to the above construction joints, if the treatment is performed with cross shaft rotary mixers, is to actually mix three inches (3") into the previous day's work to assure a good bond to the adjacent work.

3.07 FINAL GRADING

A. Finish all lime/cement treated engineered fill grades to within a tolerance of 0.05' of grades shown for top of lime/cement stabilization treatment or as indicated by drawings and specifications.

B. Leave all areas in suitable condition for subsequent work.

C. Excess materials not needed for final grading operations shall be removed from the site.

3.07 CURING

A. The surface of compacted and finish graded lime/cement treated soil shall be kept moist for at least 3 days after final trimming, rolling and compacting. No equipment or traffic shall be permitted on the lime treated material during the 3 day cure, except for the water truck to keep the treated area at or above the optimum moisture. After the 3 day cure apply aggregate base. Maintain moisture curing at optimum level until aggregate base is placed

END OF SECTION

SECTION 32 16 00

SITE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:

1. The Section describes the requirements for providing portland cement concrete paving, including accessibility ramps, sidewalks, accessible routes of travel, vehicular travel, drain structures, sewer structures, thrust blocks and for other non-structural or non-vehicular applications.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

2. Section 01 50 00, Construction Facilities and Temporary Controls.

3. Section 310000, Earthwork.

4. Section 313200, Soil Stabilization.

1.02 REFERENCES AND STANDARDS

A. California Building Code, latest edition.

B. ACI Standards, ACI 301-20.

C. ASTM C94, Specification for Ready-Mixed Concrete.

D. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice (latest edition).

E. ASTM – American Society for Testing and Materials.

1.03 SUBMITTALS

A. Refer to Section 01 33 00.

B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

C. Materials list: Submit to the Architect a complete list of all materials proposed to be used in this portion of the work. Submitted items should include but are not limited to sand, gravel, admixtures, surface treatments, coloring agents, sealers, fibers, cast-in-place accessories, forming and curing products and concrete mix designs.

D. With concrete submittal, provide documented history of mix design performance.

1.04 QUALITY ASSURANCE

A. Use only new materials and products.

B. Use materials and products of one manufacturer whenever possible.

C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

D. Sieve analysis from testing laboratories identifying rock/sand percentages within the concrete mix; or class 2 aggregate base shall have the current project name and project location identified on the report. Outdated analytical reports greater than 90 days old will not be accepted

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.

C. Transport, store and handle in strict accord with the manufacturer's written recommendations.

D. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

E. Store cement in weather tight building, permitting easy inspection and identification. Protect from dampness. Lumpy or stale cement will be rejected.

F. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregate. Use only one supply source for each aggregate stock pile.

1.06 WARRANTY

A. Refer to General Conditions and Section 01 78 36.

1.07 TESTING

A. General: Refer to Section 01 40 00 – Quality Requirements.

B. Cement and Reinforcing shall be tested in accordance with CBC Section 1910A. Testing of reinforcing may be waived in accordance with Section 1910A.2 when approved by the Structural Engineer and DSA.

1.08 ADEQUACY AND INSPECTION

A. Design, erect, support, brace and maintain formwork and shoring to safely support all vertical and lateral loads that might be applied until such loads can be carried by concrete.

B. Notify Inspector, Architect and DSA at least 48 hours prior to placing of concrete.

1.09 PROTECTION

A. Finish surfaces shall be protected at all times from concrete pour. Inspect forming against such work and establish tight leak-proof seal before concrete is poured. Finish work damaged, defaced or vandalized during the course of construction shall be replaced by contractor at contractor expense.

1.10 FIELD MEASUREMENTS

A. Make and be responsible for all field dimensions necessary for proper fitting, slopes and completion of work. Report discrepancies to Architect before proceeding.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement: Portland cement, ASTM C150, Type II, per ACI 301-20.

B. Concrete Aggregates: Normal weight aggregates shall conform to ASTM C33, except as modified by this section. Combined grading shall meet limits of ASTM C33. Lightweight aggregate shall conform to ASTM C330, suitably processed, washed and screened, and shall consist of durable particles without adherent coatings.

C. Water: Clean and free from deleterious amounts of acids, alkalis, scale, or organic materials and per ACI 301-20.

D. Fly Ash: Western Fly Ash, conforming to ASTM C618 for Class N or Class F materials (Class C is not permitted). Not more than 15% (by mass) may be substituted for portland cement.

E. Water Reducing Admixture: Admixture to improve placing, reduce water cement ratio, and ultimate shrinkage may be used. Provide WRDA 64 by Grace Construction Products or approved equal. Such admixture must receive prior approval and shall be included in original design mix.

F. Air-entraining Admixture: Daravair 1000 by Grace Construction Products or approved equal. Admixture must conform to ASTM C260 and ACI 318-14, section 26.4.1.4.

G. Surface Retarder (for exposed aggregate finishes): Rugasol-S by Sika Corporation or approved equal.

H. Form Coating: Material which will leave no residue on concrete surface that will interfere with surface coating, as approved by the Architect.

I. Reinforcement Bars: New billet steel deformed bars conforming to requirements of ASTM A615 or ASTM A706; Grade 60. Dowels for installation through expansion joints or construction joints to existing sidewalks or concrete features shall be smooth or shall be sleeved on one end for slippage.

J. Reinforcing supports: Galvanized metal chairs or spacers or metal hangers, accurately placed 3'-0" O.C.E.W. Staggered and each support securely fastened to steel reinforcement in place. Bottom bars in footings may be supported with 3" concrete blocks with embedded wire ties. Concrete supports without wire ties will not be allowed.

K. Truncated Domes: Vitrified Polymer Composite (VPC), Cast-In-Place Detectable/Tactile Warning Surface Tiles; "Armor-Tile", "Access Tile Tactile Systems", or approved equal. Tiles shall comply with Americans with Disabilities Act and the California Code of Regulations (CCR) Title 24, Part 2, Chapter 11B (dome spacing shall be 2.35"). Install tiles as recommended by manufacturer. Color, federal yellow (FS 33538).

L. Curing Compound (for exterior slabs only): Burke Aqua Resin Cure by Burke by Edoco, 1100 Clear by W.R. Meadows or accepted equal. Water based membrane-forming concrete curing compound meeting ASTM C 309 and C1315.

M. Concrete Bonding Agent: Weld-Crete by Larson Products Corp., Daraweld C by Grace Construction Products or accepted equal.

N. Patching Mortar: Meadow-Crete GPS, one-component, trowel applied, polymer enhanced, shrinkage-compensated, fiber reinforced, cementitious repair mortar for horizontal, vertical and overhead applications as manufactured by W.R. Meadows or accepted equal.

O. Non-shrink Grout: Masterflow 713 Plus by Master Builders or approved equal. Premixed,non-metallic, no chlorides, non-staining and non-shrinking per CRD-C621, Corps of Engineers Specification and ASTM C 1107, Grades B and C.

P. Aggregate Base: Class 2 AB per Caltrans specification section 26-1.02A.

Q. Expansion Joint Material: Preformed 3/8" fiber material, full depth of concrete section, with bituminous binder manufactured for use as concrete expansion joint material, as accepted by the Architect.

R. Joint sealant for expansion joints: Single component silicone sealant, Type S, ASTM D5893.

1. Reference Standard: ASTM C920, Grade P, Class 25, Use T.
2. Dow Corning 890-SL (self-leveling) Silicone, or accepted equal.

3. Dow Corning 888-NS (non-sagging) Silicone, at slopes exceeding 5%. May not be used at asphalt surfaces.
4. Color: Custom color as selected by Architect.

S. Pre- Formed plastic Expansion Joint; W.R. Meadows 3/8" "Snap Cap", Tex-Trude expansion joint cap, or an approved equal.

T. Adhesive Anchoring (Epoxy): Simpson SetXP, or approved equal.

2.02 CONCRETE DESIGN AND CLASS

A. Class "B": Concrete shall have 1" max. size aggregate, shall have 3000 psi min. at 28 day strength with a maximum water to cementitious ratio no greater than 0.50. Use for exterior slabs, including walks, vehicular paved surfaces, manhole bases, poured-in-place drop inlets, curbs, valley gutters, curb & gutter and other concrete of like nature.

B. Slump Limits: Provide concrete, at point of final discharge, of proper consistency determined by Test Method ASTM C143 with a slumps of 4" plus or minus 1".

C. Mix Design: All concrete used in this work will be designed for strength in accordance with provisions of ASI 318-14 Section 26.4. Should the Contractor desire to pump concrete, a modified mix design will need to be submitted for review. Fly ash may be used in concrete to improve workability in amounts up to 15% of the total cementitious weight.

D. Air Entrainment; Per the Local Jurisdiction minimum requirements, or 3% minimum.

2.03 MIXING OF CONCRETE

A. Conform to requirements of CBC, Chapter 19A.

B. All concrete shall be mixed until there is uniform distribution of material and mass is uniform and homogenous; mixer must be discharged completely before the mixer is recharged.

C. Concrete shall be Ready-mixed Concrete.

1. Placement of concrete shall occur as rapidly as possible after batching and in a manner which will assure that the required quality of the concrete is maintained. In no case may concrete be placed more than 90 minutes from batch time.

2. Water may be added to the mix only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. In no case shall more than 10 gallons of water shall be added to a full 9 yard load, or 1 gal. per yard on remaining concrete within the drum providing load tag indicates at time of mixing at plant will allow for additional water.

2.04 MATERIALS TESTING

A. Testing of concrete shall be performed per article 3.12 of this specification.

2.05 EQUIPMENT

A. Handling and mixing of concrete: Project Inspector may order removal of any equipment which in his opinion is insufficient or in any way unsuitable.

PART 3 - EXECUTION

3.01 APPROVAL OF FORMS AND REINFORCEMENTS

A. Forms and reinforcements are subject to approval by the Project Inspector, and notice of readiness to place first pour shall be given 48 hours prior to placement of concrete. Before placing concrete, clean tools, equipment and remove all debris from areas to receive concrete. Clean all reinforcing and other embedded items off all coatings oil, and mud that may impair bond with concrete.

B. All reinforcing steel shall be adequately supported by approved devices on centers close enough to prevent any sagging.

C. All reinforcing bar lap splices shall be staggered a minimum of 5 ft.

D. Additional reinforcing steel shall be placed around all utility boxes, valve boxes, manhole frames and covers that are located within the concrete placements.

1. The bars shall be placed so that there will be a minimum of 1 ½” clearance and a maximum of 3” clearance. The reinforcing steel shall be placed mid-depth of concrete slab.

E. At all right angles or intersections of concrete walks, additional 2’x2’ #5, 90 degree bars shall be added at all inside corners for additional crack control. The bars shall be placed 2” from concrete forms and supports at mid-depth of slab.

3.02 PROTECTION

A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

C. Sub-Grade in vehicular concrete paved areas: Subgrade shall be clean, shaped and compact to hard surface free from elevations or depressions exceeding 0.05’ in 10' from true plan. Compact per Section 31 00 00. Compaction and moisture content shall be verified immediately prior to placement of concrete. Proof roll subbase in presence of geotechnical engineer prior to placement of aggregate base.

3.03 CLEANING

A. Reinforcement and all other embedded items at time of placing concrete to be free of rust, dirt oil or

any other coatings that would impair bond to concrete.

B. Remove all wood chips, sawdust, dirt, loose concrete and other debris just before concrete is to be poured. Use compressed air for inaccessible areas. Remove all standing water from excavations.

3.04 FORMING

A. Form material shall be straight, true, sound and able to withstand deformation due to loading and effects of moist curing. Materials which have warped or delaminated, or require more than minor patching of contact surfaces, shall not be reused.

B. Build forms to shapes, lines, grades and dimensions indicated. Construct form work to maintain tolerances required by ACI 301. Forms shall be substantial, tight to prevent leakage of concrete, and properly braced and tied together to maintain position and shape. Butt joints tightly and locate on solid backing. Chamfer corners where indicated. Form bevels, grooves and recesses to neat, straight lines. Construct forms for easy removal without hammering, wedging or prying against concrete.

C. Space clamps, ties, hangers and other form accessories so that working capacities are not exceeded by loads imposed from concrete or concreting operations.

D. Build openings into vertical forms at regular intervals if necessary to facilitate concrete placement, and at bottoms of forms to permit cleaning and inspection.

E. Build in securely braced temporary bulkheads, keyed as required, at planned locations of construction joints.

F. Slope tie-wires downward to outside of wall.

G. Brace, anchor and support all cast-in items to prevent displacement or distortion.

H. During and immediately after concrete placing, tighten forms, posts and shores. Readjust to maintain grades, levels and camber.

I. Concrete paving, Curbs, Curb and Gutters, Ramps:

1. Expansion Joints: Install at locations indicated, and so that maximum distance between joints is 20’ for exterior concrete unless otherwise shown. Expansion joint material shall be full depth of concrete section. Recess for backer rod and sealant where required. Expansion joints shall not exceed ¼ inch depth measured from finish surface to top of felt or sealant, and ½ inch width.
2. Curbs, Valley Gutter, and Curb & Gutter: Install expansion joints at 60’ on center, except when placing adjacent to concrete walks, the expansion joints shall align with the expansion joints shown for the concrete walks. Expansion joint material shall be full depth of concrete section. Recess for backer rod and sealant will be required.
3. Isolation Joints: 3/8” felt between walls and exterior slabs or walks so that paved areas are isolated from all vertical features, unless specifically noted otherwise on plans.
4. Exterior Concrete Paving: Install expansion joints at 20’ on center maximum, both directions, unless shown otherwise on plans.

5. Ramps; whether shown or not all ramps shall have control joints and expansion joints.

a. Control joints on ramps shall be aligned and be placed in between with the vertical posts for the handrails. The curbs, if required shall have control joints that align with the handrail posts.
b. Expansion joints shall be placed at the upper, intermediate, and bottom landings.

3.05 FORM COATING

A. Before placement of reinforcing steel, coat faces of all forms to prevent absorption of moisture from concrete and to facilitate removal of forms. Apply specified material in conformance with manufacturer's written directions.

B. Before re-using form material, inspect, clean thoroughly and recoat.

C. Seal all cut edges.

3.06 INSTALLATION

A. General: Reinforcement shall be accurately placed at locations indicated on the drawings within required tolerances and providing required clearances. Reinforcement shall be secured prior to placement of concrete such that tolerances and clearances are maintained. Coverage shall be in accordance with Section 1907 of the CBC. Keep a person on the job to maintain position of reinforcing as concrete is placed. Reinforcement must be in place before concreting is begun. Install dowels as shown on drawings. Give notice whenever pipes, conduits, sleeves, and other construction interferes with placement; obtain method of procedure to resolve interferences. All expansion and construction joints in concrete shall have dowels of size and spacing as shown, or as approved by Architect.

B. Placing Tolerances:

1. Per ACI 301-20 Recommended Practice for Placing Reinforcing Bars, unless otherwise shown.

C. Splices:

1. General: Unless otherwise shown on drawings, splice top reinforcing at midspan between supports, splice bottom reinforcing at supports and stagger splices at adjacent splices 5 foot minimum. Bar laps shall be wired together. Reinforcing steel laps shall be as follows:
   a. Lap splices in concrete: Lap splice lengths shall not be less than 62 bar diameter for No. 5 bar, 56” minimum for No. 6 bars. No. 4 bar shall have a minimum of 24” splice. 93 bar diameters for No. 7 bars and larger.
   b. All splices shall be staggered at 5 feet minimum.

3.07 INSPECTION

A. Approval of reinforcing steel, after installation, must be received from Inspector. Architect, Structural Engineer and DSA must be notified 48 hrs. in advance of beginning of concrete placement operations.

B. Slope of concrete forms and finish condition shall be checked with a two foot (2’) digital level.

3.08 PLACING OF CONCRETE

A. Adjacent finish surfaces shall be protected at all times during the concrete pour and finishing. Verify that all formwork is tight and leak-proof before concrete is poured. Finish work defaced during the concrete pour and finishing shall be replaced at no extra cost to the owner.

B. Transport concrete from mixer to place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients. Deposit as close as practicable in final position to avoid re-handling or flowing. Partially hardened concrete must not be deposited in work. Concrete shall not be wheeled directly on top of reinforcing steel.

C. Placing: Once started, continue concrete pour continuously until section is complete between predetermined construction joints. Prevent splashing of concrete onto adjacent forms or reinforcement and remove such accumulation of hardened or partially hardened concrete from forms or reinforcement before work proceeds in that area. Free fall of concrete shall not to exceed 4'-0" in height. If necessary, provide lower openings in forms to inject concrete and to reduce fall height.

D. Remove form spreaders as placing of concrete progresses.

E. Place footings as monolithic and in one continuous pour.

F. Keep excavations free of standing water, but moisture condition sub-grade before concrete placement.

G. Compacting: All concrete shall be compacted by mechanical vibrators. Concrete shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms. Vibrating shall not be applied to concrete which has already begun to initially set nor shall it be continued so long as to cause segregation of materials.

H. Concrete Flatwork:

1. All flatwork shall be formed and finished to required line and grades. Flatwork shall be true and flat with a maximum tolerance of 1/8" in 10’ for flatness. Flatwork which is not flat and are outside of the maximum specified tolerances shall be made level by the Contractor at no additional expense to the Owner.
2. Thoroughly water and soak the flatwork subgrade as required to achieve required moisture content prior to the concrete pour. Provide damming as required to keep water within the formed area and to allow for proper saturation of the subgrade.
3. Concrete vibrator shall be used to assist concrete placement. Contractor shall have spare concrete vibrator on site during concrete placement.

I. Placing in hot weather: Comply with ACI 305R-10. Concrete shall not exceed 85 degrees F at time of placement. Concrete shall be delivered, placed and finished in a sufficiently short period of time to avoid surface dry checking. Concrete shall be kept wet continuously after tempering until implementation of curing compound procedure in accordance with this specification.

J. Placing in cold weather: Comply with ACI 306R-16. Protect from frost or freezing. No antifreeze

admixtures are permitted. When deposited concrete during freezing or near-freezing weather, mix shall have temperature of at least 50 degrees F but not more than 90 degrees F. Concrete shall be maintained at temperature of at least 50 degrees F for not less than 72 hours after placing or until it has thoroughly hardened. Provide necessary thermal coverings for any flat work exposed to freezing temperatures.

K. Horizontal construction joint: Keep exposed concrete face of construction joints continuously moist from time of initial set until placing of concrete; thoroughly clean contact surface by chipping entire surface not earlier than 5 days after initial pour to expose clean hard aggregate solidly embedded, or by approved method that will assure equal bond, such as green cutting. If contact surface becomes contaminated with soil, sawdust or other foreign matter, clean entire surface and re-chip entire surface to assure proper adhesion.

3.09 CONCRETE FINISHES

A. Concrete Slab Finishing: Surface shall be free from trowel marks, depressions, ridges or other blemishes. Tolerance for flatness shall be 1/8" in 10'. Provide final finish as follows:

1. Flatwork, medium broom finish: Typical finish to be used at all exterior walks and stairs.
2. Ramps, heavy broom finish: Concrete surfaces with slope greater than 5% including all ramps. Brooming direction shall run perpendicular to slope to form non-slip surface
3. Under no circumstances can water be added to the top surface of freshly placed concrete.

B. Curb Finishing: Steel trowel.

C. Joints and Edges: Mark-off exposed joints, where indicated, with ¼” radius x 1” deep jointer or edging tool. Joints to be clean, cut straight, parallel or square with respect to concrete walk edge. Tool all edges of exposed expansion and contraction joints, walk edges, and wherever concrete walk adjoins other material or vertical surfaces.

1. The expansion joints shall be full depth as shown in the plan details. Failure to do so will result in non-compliance and shall be immediately machine cut by the contractor at his expense.

D. Exposed Concrete Surface Finishing (not including top surface of flatwork): Remove fins and rough spots immediately following removal of forms from concrete which is to be left exposed. Damaged and irregular surfaces and holes left by form clamps and sleeves shall be patched with grout. Tie wires are to be removed to below exposed surface and holes pointed up with neat cement paste similar to procedure noted under "Patching" below. Removal of tie wires shall extend to distance of 2" below established grade lines. Ends of tie wires shall be cut off flush at all other, unexposed locations. Care shall be taken to match adjacent finishes of exposed concrete surface. After patching, all concrete that is to remain exposed, shall be sacked with a grout mixture of 1-part cement, 1 1/2- parts fine sand and sufficient water to produce a consistency of thick paint. After first wetting the concrete surface, apply mixture with a brush and immediately float entire surface vigorously using a wood float. Keep damp during periods of hot weather. When set, excess grout shall be scraped from wall with edge of steel trowel, allowed to set for a time, then wiped or rubbed with dry burlap. Entire finishing operation of any area shall be completed on the same day. This treatment shall be carried to 4" below grade, and all patching and sacking shall be done immediately upon removal of the forms.

E. Stair Treads and Risers: Tool exterior stair tread nosing per ADA requirements and as detailed. Paint or stain tooled area at every stair tread nosing or as detailed. Stair tread nosing shall contain no pockets, voids or spalls. Patching is not allowed. Damaged nosing shall be replaced.

3.10 CURING

A. Flatwork/Variable Height Curbs, Curb and gutter, Valley Gutter: Cure utilizing Curing Compound. If applicable, the Contractor shall verify that the approved Curing Compound is compatible with the approved colorant system. Upon completion of job, wash clean per manufacturer's recommendations.

1. Curing compound shall be applied in a wet puddling application. Spotty applications shall be reason for rejection and possibly concrete removal and replacement at the contractor's expense with no compensation from the owner.

B. No Curing Compound shall be applied to areas scheduled to receive resilient track surface including, curbs, ramps, run ways, etc.

3.11 DEFECTIVE CONCRETE

A. Determination of defective concrete shall be made by the Architect or Engineer. His opinion shall be final in identifying areas to be replaced, repaired or patched.

B. The Owner reserves the right to survey the flatwork, if it is determined to be outside of the maximum tolerance for flatness. If the flatwork is found to be out of tolerance, then the Contractor will be required to replace concrete. The Contractor will be responsible for reimbursing the Owner for any surveying costs incurred. Determination of flatwork flatness, surveying and any remedial work must be completed far enough in advance so that the project schedule is maintained, delays are avoided and the new flatwork or flatwork repairs are properly cured.

C. As directed by Architect, cut out and replace defective concrete. All defective concrete shall be removed from the site. No patching is to be done until surfaces have been examined by Architect and permission to begin patching has been provided.

D. Permission to patch any area shall not be considered waiver of right, by the Owner, to require removal of defective work, if patching does not, in opinion of Architect, satisfactorily restore quality and appearance of surface.

E. Defective concrete is:

1. Concrete that does not match the approved mix design for the given installation type.
2. Concrete not meeting specified 28-day strength.
3. Concrete which contains rock pockets, voids, spalls, transverse cracks, exposed reinforcing, or other such defects which adversely affect strength, durability or appearance.
4. Concrete which is incorrectly formed, out of alignment or not plumb or level.

5. Concrete containing embedded wood or debris.
6. Concrete having large or excessive patched voids which were not completed under Architect's direction.
7. Concrete not containing required embedded items.
8. Excessive Shrinkage, Traverse cracking, Crazing, Curling; or Defective Finish. Remove and replace if repair to an acceptable condition is not feasible.
9. Concrete that is unsuitable for placement or has set in truck drum for longer than 90 minutes from the time it was batched.
10. Expansion joint felt that is not isolating the full depth of the concrete section, and recessed as required for backer rod and sealant where required.
11. Concrete that is excessively wet or excessively dry and will not meet the minimum or maximum slump required per mix design.
12. Finished concrete with oil stains from equipment use, and or rust spots that cannot be removed.
13. Control joints (weakened planed joints) that do not meet the required minimum depth shown on the drawings.

F. Patching: Install specified Patching Mortar per manufacturer's recommendations. REPAIRS TO DEFECTIVE CONCRETE WHICH AFFECT THE STRENGTH OF ANY STRUCTURAL CONCRETE MEMBER OR COMPONENT ARE SUBJECT TO APPROVAL BY THE ARCHITECT AND DSA.

3.12 CONCRETE TESTING

A. Comply with CBC Section 1903A, 1905A.1.16, 1910A and 1705A.3 and as specified in B. below. Costs of tests will be borne by the Owner.

B. Four identical cylinder samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards of concrete, or not less than once for each 2,000 square feet of surface area for slabs or walls. In addition, samples for strength tests for each class of concrete shall be taken for seven-day tests at the beginning of the concrete work or whenever the mix or aggregate is changed.

C. Strength tests will be conducted by the Testing Lab on one cylinder at seven (7) days and two cylinders at twenty-eight (28) days. The fourth remaining cylinder will be available for testing at fifty-six (56) days if the 28-day cylinder test results do not meet the required design strength.

D. On a given project, if the total volume of concrete is such that the frequency of testing required by paragraph B. above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

E. Cost of retests and coring due to low strength or defective concrete will be paid by Owner and back-charged to the Contractor.

F. Each truck shall be tested for slump before concrete is placed.

3.13 REMOVAL OF FORMS

A. Remove without damage to concrete surfaces.

B. Sequence and timing of form removal shall insure complete safety of concrete structure.

C. Forms shall remain in place for not less than the following periods of time. These periods represent cumulative number of days during which temperature of air in contact with concrete is 60 degrees F and above.

1. Vertical forms of foundations, walls and all other forms not covered below: 5 days.
2. Slab edge screeds or forms: 7 days.
3. Concrete columns and beam soffits: 28 days.

D. Concrete shall not be subjected to superimposed loads (structure or construction equipment) until it has attained its full design strength and not for a period of at least 21 days after placing. Concrete systems shall not be subjected to construction loads in excess of design loads.

3.14 CLEANING

A. Refer to Section 01 74 00.

B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

C. Clean excess material from surface of all concrete walks and utility structures.

D. Power wash all concrete surfaces to remove stains, dried mud, tire marks, and rust spots.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. Fence framework, fabric, and accessories.

2. Excavation for post bases; concrete foundation for posts.

3. Manual gates and related hardware.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 08 71 00: Door Hardware.
3. Section 32 16 00: Site Concrete.

1.02 REFERENCES

A. ANSI/ASTM A123 - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

B. ANSI/ASTM F567 – Installation of Chain link Fence.

C. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

D. ASTM C94 – Ready-mixed Concrete.

E. Chain link Fence Manufacturers' Institute (CLFMI) – Product Manual.

1.03 SYSTEM DESCRIPTION

A. Fence Height: 6'-0" unless otherwise noted.

B. Line Post Spacing: At intervals not exceeding 10 feet.

1.03 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01 33 00.

B. Submit samples of Vinyl Slats for color selection by Engineer.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years experience.

B. Installer: Company specializing in installations of chain-link fencing with a minimum of five years of experience. If any welding is required provide welders' certificates, verifying AWS qualification within the previous 12 months.

1.05 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on shop drawings.

1.06 WARRANTY

A. Manufacture of slats to provide a 25 year warranty against color fading and breakage of slats.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Fabric:
(DESIGNERS!! SELECT THE APPROPRIATE MESH FOR YOUR PROJECT. DELETE THOSE NOT USED.)

1. Type A - Non-Slatted Fabric: Standard Industrial grade, 1-3/4 inch mesh, 9 gauge hot-dipped galvanized steel wire, top selvage, knuckle end closed, bottom selvage, knuckled end closed.

2. Type B - Non-Slatted Fabric: Black vinyl coated tight weave, 1" mesh, 9-gauge zinc coated steel wire coated with black vinyl, top selvage knuckled tight, bottom selvage knuckled end closed. Posts to be powder coated where vinyl coated fabric occurs. Finish: ASTM F 668 Class 2b, 7mil (0.18 mm) thickness thermally fused over zinc-coated wire. Color shall be: BLACK, GREEN, BROWN, BEIGE (to be chosen by Owner's Representative).

3. Type C - Non-Slatted Fabric: Black vinyl coated tight weave: 2" mesh, 9-gauge zinc coated steel wire coated with black vinyl, top selvage knuckled tight, bottom selvage knuckled end closed. Posts to be powder coated where vinyl coated fabric occurs. Finish: ASTM F 668 Class 2b, 7mil (0.18 mm) thickness thermally fused over zinc-coated wire. Color shall be: BLACK, GREEN, BROWN, BEIGE (to be chosen by Owner's Representative).

4. Type D - Privacy Slatted Fabric: Industrial grade. 3-1/2-inch x 5" diamond mesh interwoven wire with factory installed 2.310" wide PDS "IDS" slats full height or approved equal. Secure slats with monel-clinch-lock staples. 9-gauge zinc coated steel wire, top selvage knuckled tight, bottom selvage knuckled end closed. Color as selected by Owner from Manufacturer's Standard range of colors. Slats to be fabricated of extruded high-density virgin polyethylene, containing color pigmentation and U.V. inhibitors.

B. Line Posts: ASTM F1083 SCH 40 galvanized, round, 2.875 inch diameter.

C. Terminal and Corner Posts: ASTM F1083 SCH 40 galvanized, round, 4.000 inch diameter.

D. Gate Posts: ASTM F1083 SCH 40 galvanized, round, 4.0 inch diameter.

E. Gate Frame: 1-7/8 inch SCH 40 galvanized diameter, for fittings and truss rod fabrication.

F. Top Rail, Middle Brace Rail and Bottom Rail: ASTM F1083 SCH 40 galvanized, round, 1.66 inch diameter, plain end, sleeve coupled at top.

G. Tie Wires: 9 gauge galvanized steel wire.

H. Concrete: ASTM C94; Portland Cement, 2,500 p.s.i. strength at 28 days, 3 inch slump; one inch maximum sized coarse aggregate.

I. Kickplate: 12 ga. Steel hot dipped galvanized.

J. Cane Bolt Receiver: 1-1/4” x 8” galvanized pipe.

2.02 ACCESSORIES

A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel galvanized.

C. Gate Hardware: Fork latch with gravity drop mechanical keepers; three 180 degrees gate hinges per leaf and hardware for padlock. Padlock to be provided by District.

D. ADA Accessible Gate Latch, Lockable; Paddle type lever that opens gate without full rotation.

2.03 FINISHES

A. Components and Fabric: Galvanized to ANSI/ASTM A123; 1.2 oz./sq. ft.

B. Hardware: Galvanized to ASTM A153, 1.2 oz./sq. ft. coating.

C. Accessories: Same finish as framing.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install framework, fabric, accessories and gates in accordance with ANSI/ASTM F567-93 and manufacturer’s instructions.

B. Drill caissons to diameter and depth as shown in the drawings, and or details. Clean holes and remove all loose dirt to a hard undisturbed bottom.

1. When placing fence posts in existing asphalt, the existing asphalt shall be cored drilled with a diamond core hole saw 3' larger than the caisson diameter. Under no circumstances shall an auger dirt bit be used to drill through the asphalt.

2. When placing fence posts where the new surrounding finish surface will be asphalt, the fence posts shall be placed first before the asphalt is laid. Top of post caisson shall be at the top of aggregate base.

C. Set intermediate, terminal and gate posts plumb in concrete caisson. Slope top of concrete for water runoff. Use concrete vibrator in each caisson during concrete placement to settle and seat concrete.

(DESIGNER! EDIT FOR FENCE HEIGHT)

D. Line, Terminal, and Gate Post Footing Depth Below Finish Grade: 42 inches and 12 inches diameter.

E. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail, on bay from end and gate post.

F. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

G. Install center and bottom rails all around enclosure.

H. Stretch fabric between terminal posts.

I. Position bottom of fabric 1 inch above finished grade.

J. Fasten fabric to top, center and bottom rail and line posts with tie wire at maximum 12 inches on centers.

K. Attach fabric to end, corner and gate posts with tension bars and tension bar clips at 12 inches on center.

L. Install gate with fabric to match fence. Install three hinges per leaf, Install latches, catches, retainers and locking clamp.

M. Provide kickplate at all accessible gate accesses. Weld to gate frame with 3/16" x 1" welds at 4" o.c. Weld all 4 corners. Grind all welds and edges smooth. Treat all welds with galvanizing zinc "Hot Stick."

N. All field welding to be performed by certified welder and all welds are to be ground down smooth and treated.

O. All areas of welds are to be thoroughly cleaned, fluxed, and treated with galvanizing zinc "Hot Stick". Do not over heat pipe when treating.

P. At double swing gates, install cane bolt receiver in concrete measuring 8" diameter, 12" deep.

3.02 ERECTION TOLERANCES

A. Maximum variation from plum: 1/8 inch.

B. Maximum offset from true position: 3/8 inch.

C. Components shall not infringe adjacent property lines.

END OF SECTION

SECTION 32 31 19

DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:

1. Ornamental picket fencing, gates and accessories.

B. RELATED SECTIONS:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

2. Section 08 71 00: Door Hardware (except hinges which are specified herein).

3. Section 32 13 00: Portland Cement Concrete Paving.

1.03 SUMBITTALS

A. Shop Drawings: Layout of all fences and gates with dimensions, details and finishes of component accessories and post foundations.

B. Product Data: Manufacturer's catalogue cuts indicating material compliance and specified options including steel tube sizes.

C. Samples: Color selections for polyester powder coat finish.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Products from other qualified manufacturers having a minimum of 5 years experience manufacturing ornamental picket fencing will be acceptable by the architect as equal if they meet the following specifications for design, size, gauge of metal parts and fabrication (or equal).

B. Ornamental Picket Fence and Swing Gates:
Style: Monumental Iron Works Imperial B-3 Horizontal Rails, or approved equal.
Heights: 6'0" or as otherwise indicated on the Drawings.

C. Approved Manufacturers:

1. Monumental Iron Works, Baltimore, MD,
   Phone (888) MH-Fence, (888) 643-3623

2. Ameristar, Tulsa, OK
   Phone (888) 333-3422

3. Merchant Metals
   Phone (770) 741-0300
   211 Perimeter Way, Suite 250
   Atlanta, GA 30346

4. LOCINOX USA.
   Phone (877) 562-4669
   460 Windy Point Drive
   Glendale Heights, IL 60139

2.02 ORNAMENTAL PICKET FENCE

A. Pickets: Square tubular members, ASTM A513, hot-rolled structural quality steel. 50,000 psi (310 Mps) tensile strength, 60,000 psi (372 Mpa) yield strength. Minimum size pickets ¾ inches square x 16 ga. Space pickets 3-15/16" maximum (100mm) face to face. Attach each picket to each rail with ¼" (6mm) industrial drive rivets. Size #4. Minimum gauge wall thickness solid gauge.

B. Rails: "U" channels formed from hot-rolled structural steel having no pockets or shelves to hold water or moisture, 1-3/8" (35 mm) wide x 1-1/2" (38 mm) deep, 11-gauge (0.120" (3.05 mm) wall thickness. Punch rails to receive pickets and rivets and attach rails to rail brackets with 2 each, ¼" (6 mm) industrial drive rivets. Size #4. Steel for rail produced under ASTM A446. Provide top rail, bottom rail, and third rail 6" below top rail.

C. Posts: Square tubular members, ASTM A500, hot-rolled structural quality steel, 50,000 psi (310 Mpa) Tensile strength, 60,000 psi (372 Mpa) yield strength, with ASTM A525 hot-dipped galvanized G90 coating. Minimum post size 4" sq., having minimum 12-gauge wall thickness. Post size at gates as required to support specified gate leaf size. Posts at all gates to receive LOCINOX hardware shall be between .2 inches and .313 inches thick.

D. Accessories: post caps.

E. Finish: After all steel components have been galvanized, clean and prepare the surface of all components to assure complete adhesion of finish coat. Apply 2.5 mil (0.0635) thickness of polyester resin-based powder coating by electrostatic spray process. Bake finish for 20 minutes at 450°C (232°C) metal temperature. Color as selected by Architect from manufacturer's full range of standard colors.

2.03 GATES

A. Ornamental picket swing gates in same style configuration and height as specified fencing.

B. Gate posts shall be of extra heavy-duty construction and size to adequately support each specified gate leaf size without sag.

C. Provide panic hardware at non-vehicular gates.

D. Gate Hardware

1. See drawings for gate elevations and hardware groups.

2. Lever Hardware Kit – LOCINOX USA – LAKQ U2 chain link lock kit. For use at required accessible passage type gates not requiring panic devices.

3. Self-Closing Hinge System – LOCINOX USA – Mammoth-HD 180 Degree Closer and Hinge Kit for gates up to 440 lbs. Opening force shall be less than 5 lbs. For use at all accessible required gates along path of travel or along egress route with panic devices. Provide manufacturer's optional mounting hardware for thicker gate post material.

4. Heavy Duty Hinges: Provide heavy-duty weld hinges of size capable of supporting specified leaf width without sag or failure. Gorilla hinge or equal. For all maintenance type swing gates.

2.04 ACCESSORIES

A. Rail Attachment Brackets – Monumental Iron Works Pro-Arc swivel bracket with up to 30 degree swivel (up/down/left/right) or approved equal). Bracket to fully encapsulate rail end for complete security that is aesthetically pleasing. Note to Bidder: District has standardized on this specific bracket and requires it to be used regardless of which fence panel manufacture is submitted on. Bid accordingly.

B. Industrial Drive Rivets: Of sufficient length to attach items in a secure non-rattling position. Rivet to have a minimum of 1100 lbs. (4894 N) holding power and a shear strength of 1500 lbs. (6674 N).

C. Ornamental Picket Fence Accessories: Provide indicated items required to complete fence system. Galvanize each ferrous metal item in accordance with ASTM B695 and finish to match framing.

D. Post Caps: Formed steel, cast of malleable iron or aluminum alloy, weathertight closure cap. Provide one flat style post cap for each post.

E. Picket Tops: Flat top with polymer plug.

F. Hinges: Provide heavy-duty weld hinges of size capable of supporting specified leaf width without sag or failure. Gorilla hinge or equal.

G. Locking Clasps: Provide heavy-duty hardware to receive padlock at location where gate leaves meet each other or strike post.

H. Padlocks: Padlocks are provided by District. Contractor to provide necessary padlock quantity to District. Once provided by Owner, Contractor shall re-key to match specific site keying.

I. Cane Bolt: Provide heavy-duty cane bolt at all 2-leaf gate configurations. Provide at each leaf to secure each leaf into pavement below. Cane bolt shall be capable of being raised and locked in the retracted position when not in use. Provide 12 inch galvanized sleeve receivers encased with 12 inch round concrete in the close and open position. Cane bolts to freely drop and lift in the closed and open position.

J. Knox Box: Model 3200 series, black. Fully weld to gate frame. Prime and paint affected finish. Location and quantity as shown on drawings. Boxes located at frontage of school shall have a reflective red adhesive sticker on front of lock body. Boxes located at other locations not on main school frontage shall have a reflective green adhesive sticker on front of lock body.

K. Knox Locks: Model 3700 series, stainless steel, exterior use. Provide at all maintenance gates and fire apparatus gates along fire lane. All locks shall have a reflective green adhesive sticker around lock body.

2.05 SETTING MATERIAL

A. Concrete: Minimum 28-day compressive strength of 3,000 psi.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify areas to receive fencing are completed to final grades and elevations.

B. Ensure property lines and legal boundaries of work are clearly established.

3.02 INSTALLATION

A. Install fence in accordance with manufacturer's instructions.

B. Space posts uniformly not to exceed a full panel width. Face of post to closest picket not to exceed 3-7/8 inch spacing.

C. Concrete Fence Set Posts: 24 inch min. diameter x 36 inch min. deep or as otherwise indicated on drawings.

D. Concrete Gate Swing Posts: Provide reinforced concrete footings as indicated on the Drawings.

E. Check each post for vertical and top alignment and maintain in position during placement and finishing operation.

F. Align fence panels between posts. Firmly attach rail brackets to posts with ¼" (6 mm) bolt and lock nut, ensuring panels and posts remain plumb.

G. Position bottom of picket 2 inches above existing/new finished grade. Distance from picket on each end

of panel to the support post shall not be greater than 4 inch.

H. Provide a line post at all 90 degree changes in direction and at all vertical panel placement changes due to grade.

I. Where touch up paint is necessary, paint shall match powder coated finish. Unacceptable finishes will require re-powder coating.

J. Cutting of manufacturer's brackets will not be accepted.

3.03 GATE INSTALLATION

A. Install gates plumb, level and secure for full opening without interference.

B. Attach hardware by means, which will prevent unauthorized removal.

C. Adjust hardware for smooth operation.

D. All gates with panic hardware to be third-party shop fabricated in a certified shop along with adjacent posts and header. Galvanized and powder coated finishes.

E. At gates with LOCINOX closer, Install hinge and closer per manufacturer's recommendations. Provide required backing inside steel gate and post. Install using only manufacturer's provided hardware.

F. Welding: All welds shall be shop fabricated prior to galvanizing unless otherwise acceptable to Owner's representative. And all field welds shall be completed by a Certified Structural Welder and shall be "spray-galvanized" or otherwise treated subject to the discretion of the Owner's Representative.

1. All field welding to be performed by a certified welder and all welds are to be ground down smooth.

2. All areas of welds are to be thoroughly cleaned and treated with two coats of cold galvanized spray.

3. All maintenance-type hinges shall be welded to the gate post.

3.04 ACCESSORIES

A. Install post caps and other accessories to complete fence. Post caps shall be riveted to post with two rivets on opposite sides of post.

3.05 CLEANING

A. Clean up debris and unused material and remove from site.

3.06 ADDITIONAL SUPPLIED ITEMS

A. Provide a bag of rivets to District.

B. Provide (4) additional 10 feet long 4 inch square tubing posts.

C. Provide twenty additional brackets to District.

END OF SECTION

SECTION 32 80 00

IRRIGATION

PART 1 – GENERAL

Construction Documents and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.01 SUMMARY

A. DESCRIPTION

1. Scope of Work: Furnish all labor, materials, tools, equipment, and transportation required to perform and complete the installation of an automatic sprinkler irrigation system, including all piping, sprinkler heads, controls, connections, testing, etc. as shown on the Drawings and as specified herein. The source of water for this project is potable water [non-potable water].
2. Utilize and accept as standards manufacturer's recommendations and/or installation details for any information not specifically detailed on the Drawings.

B. RELATED SECTIONS

1. General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 03 10 00 - Concrete Forming.
3. Division 26 – Electrical.
4. Section 31 00 00 – Earthwork.
5. Section 32 16 00 - Site Concrete.
6. Section 32 90 00 – Landscaping.

1.02 SUBMITTALS

A. Comply with requirements of Section 01 33 00 – Submittal Procedures.

B. Product names are used as standards; provide proof as to equality of any proposed material and do not use other materials or methods unless approved in writing by the Owner's Representative. Submit no more than one request for substitution for each item. The decision of the Owner's Representative is final.

C. Use equipment capacities specified herein as the minimum acceptable standards.

D. List materials in the order in which they appear in Specifications; include substitutions. Submit the list for approval by the Owner's Representative.

E. Make any mechanical, electrical, or other changes required for installation of any approved, substituted equipment to satisfaction of Owner's Representative and without additional cost to Owner. Approval by Owner's Representative of substituted equipment and/or dimensional drawing does not waive these requirements.

F. Do not construe approval of material as authorization for any deviations from Specifications unless attention of Owner's Representative has been directed to specified deviations.

G. Record Drawings: Upon completion of work, and as a precedent to final payment, deliver to Owner's Representative one complete set of reproducible originals of Drawings showing work exactly as installed

1. Regularly update plans of the system and any changes made to the system throughout the project. Record all changes on this plan before trenches are backfilled.
2. Record the as-built information on reproducible plans provided by the Architect. Complete and submit the Record Drawings to the Architect before applying for payment for work installed.
3. As-built drawings are to be completed electronically with a pdf editing software or computer aided drafting software. As-built drawing done by hand will not be accepted for final submittal.
4. Show the following on the Record Drawings accurately to scale and dimensioned from two permanent points of reference:

a. Distance of mainline from nearby hardscape.
b. Location of automatic control valves, quick couplers, and gate valves.
c. Location and size of all sleeves.
d. Location of automatic control wires and spares.

H. Operation Manuals: Deliver two complete sets of manufacturer's warranties, Contractor guarantees, instruction sheets, parts lists and operation manuals to the Architect before requesting final acceptance of the project. Do not request final inspection until the sets are approved.

1.03 QUALITY ASSURANCE

A. Qualifications of Contractor: Work must be completed by a licensed Landscape Contractor. Provide proof of five years of continuous experience in landscaping and irrigation of projects of similar size (+\- 20% of the construction cost) and scope for education campuses. Contractor to have a minimum of two projects either completed or in construction in the last five years.

B. Work Force: Ensure that an experienced foreman is present at all times during installation. Keep the same foreman and workers on the job from commencement to completion.

C. Reviews: Specifically request reviews of all items listed below in "Inspection Requirements" prior to progressing to the next level of work.

D. Certification: Ensure that the contractor installing the Central Control System is trained and certified in the installation of the Central Control System. The training and certification must have been completed within two years prior to the installation date.

E. Standards:

1. Provide work and material in full accordance with the rules and regulations of the

California Electric Code; the California Plumbing Code; and other applicable state or local laws or regulations.

2. Furnish, without extra charge, additional material and labor required to comply with these rules and regulations, though the work may not be specifically indicated in the Specifications or Drawings.
3. Where the Specification requirements exceed those of the above-mentioned codes and regulations, comply with the requirements in the Specifications.

F. Comply with the requirements of Section 01 77 00 – Closeout Procedures.

G. Inspection Requirements

1. Request and hold a pre-construction meeting prior to beginning the work of this Section. Parties required to be in attendance are the Landscape Contractor, Project Inspector, Owner's Representative, and the Landscape Architect.
2. Prior to commencement of the work of this Section, obtain written verification from the project Civil Engineer that the rough grade in landscape areas is in conformance with Section 31 00 00 - Earthwork.
3. Obtain verification from Project Inspector for the following at the appropriate times during construction and prior to further progression of work in this Section:

   a. Pressure testing of all mainlines and lateral lines (See "Hydrostatic Tests – Open Trench" in Part 3.05 of this Section),
   b. Trench depth,
   c. Sleeves under pavement,
   d. Flushing of all mainlines and lateral lines,
   e. Installation of mainline thrust blocks,
   f. Installation of Leemco joint restraints and bolts,
   g. Backfill and pipe bedding,
   h. Layout of heads,
   i. Operation of system and coverage adjustments (with Landscape Architect) after system is fully automated and operational, backfill of trenching is completed, and surface has been restored to original grades.

4. In case of failure to obtain any verification by the Project Inspector as required above, remove and replace work as necessary to obtain the verification at no additional cost to the Owner.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Use all means necessary to protect irrigation system materials before, during, and after installation and to protect related work and material.

B. Handle plastic pipe carefully, especially protecting it from prolonged exposure to sunlight. Store pipe on beds that are the full length of the pipe, and keep pipe flat and off the ground with blocks.

1.05 PROJECT/SITE CONDITIONS

A. Information on Drawings relative to existing conditions is approximate. During progress of construction, make deviations necessary to conform to actual conditions, as approved by Owner's Representative, without additional cost to Owner. Accept responsibility for any damage caused to existing services. Promptly notify Owner's Representative if services are found which are not shown on Drawings.

B. Protect existing utilities within construction area. Repair damages to utility lines that occur as a result of operations of this work.

C. Verify dimensions at building site and check existing conditions before beginning work. Make changes necessary to install work in harmony with other crafts after receiving approval by Owner's Representative.

1.06 WARRANTY

A. Guarantee all workmanship and materials hereunder against defective workmanship and materials, including damage by leaks and settlement of irrigation trenches, for the duration specified in Division 01 of these Specifications. (The Contractor is not responsible for vandalism or theft after date of final acceptance.)

1.07 SYSTEM STARTUP

A. Booster Pump:

1. Order booster pump as soon as possible to avoid delays in the project.
2. After booster pump and electrical connections have been installed, power has been made available, the downstream irrigation system has been pressure-tested, heads have been set, and trenches have been backfilled and compacted, request that the booster pump manufacturer's technician participate in and/or direct the start-up of the booster pump. Start-up shall include all testing and settings for the following:

   a. Flow
   b. Pressure
   c. Connections
   d. Electrical currents
   e. Wire connections
   f. Pump installation

3. Upon successful completion of testing by the booster pump technician, request that a checklist/certification be completed and signed by the technician. Deliver copies of the certification to both the Owner's Representative and the Landscape Architect prior to the commencement of the landscape maintenance period.

B. Central Control System

1. Install controllers, master valves, flow sensors, ground system, wiring, cables, Ethernet

and any other components not shown on the Drawings.

2. Request that the manufacturer's representative participate and/or direct the start-up of the Central Control System. Start-up shall include all testing and settings for the following:

   a. Flow sensor
   b. Grounding
   c. Wire connections
   d. Pump start
   e. Bypass
   f. Overall instruction

3. Upon successful completion of testing by the technician from [enter technician company], request that a checklist/certification be completed and signed by the technician. Deliver copies of the certification to both the Owner's Representative and the Landscape Architect prior to the commencement of the landscape maintenance period.
4. Run the system; record the flows per valve and report them to the Owner's Representative.

1.08 CLOSEOUT & MAINTENANCE

A. Furnish three complete sets of operating maintenance instructions bound in a hardback binder and indexed. Start compiling data upon approval of list of materials. Do not request final inspection until booklets are approved by Owner's Representative.

B. Incorporate the following information in these sets:

   1. Complete operating instructions for each item of irrigation equipment.
   2. Typewritten maintenance instructions for each item of irrigation equipment.
   3. Manufacturer's bulletins which explain installation, service, replacement parts, and maintenance.
   4. Service telephone numbers and/or addresses posted in an appropriate place as designated by Owner's Representative.

C. Comply with requirements of Section 32 01 90 – Landscape Maintenance.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Use materials as specified; any deviation from the Specifications must first be approved by the Owner's Representative in writing. All material containers or certificates shall be clearly marked by manufacturer as to contents for inspection.

B. Automatic Controller: As indicated on Drawings.

C. Master Valves and Flow Sensors: As indicated on Drawings

D. Automatic Control Valves: As indicated on Drawings

E. Automatic Drip Control Valve Kit:. As indicated on Drawings

F. Gate Valve: As indicated on Drawings

G. Pipe and Fittings:

1. PVC pipe: for all mainline and lateral lines, PVC schedule 40 up to 3” size and PVC Class 200 for 4” and larger.
2. PVC fittings three-inch (3”) size and smaller: High impact, standard weight, Schedule 40, molded PVC as manufactured by George Fischer, Lasco, Spears, or approved equal. [LEEMCO APPLICATION - PVC fittings for mainline two inches (2”) and smaller and all lateral lines: High impact, standard weight, Schedule 40, molded PVC as manufactured by George Fischer, Lasco, Spears, or approved equal.]
3. PVC fittings four-inch (4”) size and larger: High impact, standard weight, Class 200 gasketed, molded PVC as manufactured by George Fischer, Lasco, Spears, or approved equal. [LEEMCO APPLICATION - Ductile iron fittings for all mainline fittings two and one-half inches (2 ½”) and larger: Leemco joint restraint fittings or approved equal.]
4. All plastic pipe and fittings: Continuously and permanently marked with manufacturer's name, type of material, IPS size, schedule, NSF approval, and code number.
5. Threaded PVC pipe and nipples: IPS Schedule 80 when necessary to use threaded connections to gauges, valves, or control valves. Threaded adapters may be used in place of nipples when making pipe to valve connections.
6. Use 45-degree fittings for changes in depth of pipe, and at transition from main line to automatic control valves.
7. Piping above ground: Schedule 40 galvanized steel with cast-iron fittings.
8. Piping used for electrical purposes to be Schedule 40 PVC Rigid Nonmetallic Conduit electrical conduit.

H. Booster Pump: As indicated on Drawings

I. PVC Primer: Weld-On P-70 Purple Primer or approved equal.

J. PVC Glue: Weld-On 711 Gray heavy bodied PVC Cement or approved equal.

K. PVC Glue for connections to Flexible PVC: Weld-On 795 Blue Flex PVC Cement or approved equal. Do not use the 795 clear color.

L. Sprinkler Heads: As indicated on Drawings

M. Quick Coupler Valves: As indicated on Drawings

N. All Valve Boxes and Covers:

1. Turf and Hardscape Areas: Concrete manufactured with steel checker plate lid with “Irrigation” permanently embossed on cover. Christy or approved equal.
2. Shrub Areas: Plastic manufactured with “Irrigation-Non-Potable” permanently embossed on cover.

O. Reduced Pressure Backflow Preventer: . As indicated on Drawings

P. Automatic Sprinkler Control Wire:

1. Connections between remote control valves and controller: 14 AWG direct burial plastic polyethylene (PE) insulated wire, Paige Electric P7079D or approved equal. Common wire to be white, and lead wire to be colored. If multiple controllers are used, a different color is to be used for each controller's lead wire. (Use red for the first controller). Spare wires are to be yellow.
2. UL Listed waterproof sealing pack for wire connections: 3M DBR/Y-6, or approved equal.
3. Provide adequate working space around electrical equipment in compliance with local codes and ordinances.
4. Electrical, other than low voltage, such as power wiring, conduit, fuses, thermal overloads and disconnect switches, is included under Division 26 of these Specifications.

Q. Automatic Sprinkler Control Decoder Cable [For expansion of existing two-wire systems only]:

1. Connections between remote control valve decoders and controller: Hunter Jacketed Decoder Cable, Paige Electric P7354D. If multiple controllers are used, a different color jacket is to be used for each controller.
2. UL Listed waterproof sealing pack for wire connections: 3M DBR/Y-6, or approved equal.
3. Provide adequate working space around electrical equipment in compliance with local codes and ordinances.
4. Electrical, other than low voltage, such as power wiring, conduit, fuses, thermal overloads and disconnect switches, is included under Division 26 of these Specifications.

R. Single Station Decoder: match existing two-wire system decoder. [For expansion of existing two-wire systems only]

S. Trace Wire:

1. Direct burial #12 AWG Solid, steel core soft drawn tracer wire, 250# average tensile break load, 30 mil high molecular-high density polyethylene jacket complying with ASTM-D-1248, 30-volt rating. Color shall be green.
2. Connectors: UL Listed waterproof sealing pack for wire connections: 3M DBR/Y-6, or approved equal.

T. Master Valve and Flow Sensor Wire:

1. Master valve wires are to be 14 AWG direct burial plastic polyethylene (PE) insulated wire, Paige Electric P7079D or approved equal. Wire color to be blue for the lead and white for the common. If there are two master valves, the second master valve wire is to be blue/white striped for the lead and white for the common.
2. Flow sensor wires are to be 14 AWG direct burial plastic polyethylene (PE) insulated wire, Paige Electric P7079D or approved equal. Wire color to be black for the lead and white for the common. If there are two flow sensors, the wires leading to each flow sensor is to be a different color.

U. Unions And Flanges:

1. Steel unions and flanges two inches (2”) and smaller: 150 lb. screwed black (brass to iron seat) or galvanized malleable iron (ground joint).
2. Steel unions and flanges two and one-half inches (2 ½”) and larger: 150 lb. black flange union, flat-faced, full gasket.
3. Gaskets: One-sixteenth inch (1/16”) thick rubber Garlock No. 122, Johns-Manville or approved equal.
4. Flange Bolts: Open-hearth bolt steel, square heads with cold pressed hexagonal nuts, cadmium plated in ground. Provide copper-plated steel bolts and nuts or brass bolts and nuts for brass flanges.

V. Pipe Supports: Adjustable saddle support type support.

W. Valve Identification Tags: Christy’s irrigation ID tags, standard yellow color or approved equal.

X. Sand for Trench Backfill: Natural sand, free of roots, bark, sticks, rags, or other extraneous material.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Locations of existing utilities and other improvements shown on the Drawings are approximate. Verify existing conditions and, should any utilities be encountered that are not indicated on the plans, notify the Owner’s Representative immediately. Accept responsibility for any damages caused to existing services.

3.02 PREPARATION

A. Scheduling: Notify the Project Inspector prior to commencing and/or continuing the work of this Section. Remove and replace, at no cost to Owner, any work required as a result of failure to give the appropriate notification.

B. Examination: Examine conditions of work in place before beginning work; report defects.

C. Measurements: Take field measurements; report variance between plan and field dimensions.

D. Protection: Maintain warning signs, shoring and barricades as required. Prevent injury to, or defacement of, existing improvements. At no additional cost to Owner, repair or replace items damaged by installation operations.

E. Existing Tree Protection:

1. Avoid unnecessary root disturbance, compaction of soils within drip line, or limb breakage.
2. Do not store material or dispose of any material other than clean water within the drip line.

3. Provide adequate irrigation during construction.
4. Replace any tree damaged during construction with a tree of equal size and value at no additional cost to Owner.
5. Adjust trench locations in field to minimize damage to existing elements and plant roots of trees-to-remain at no additional cost to Owner.

F. Surface Preparation: Prior to beginning sprinkler irrigation work, complete placement of topsoil as specified in Section 31 00 00 – Earthwork. Notify Project Inspector of irregularities if any.

3.03 INSTALLATION

A. Automatic Controller

1. Automatic Controller: Install system and components as per Drawings and manufacturer's recommendations. All wiring connections shall be neatly accomplished within the controller cabinet. Connect Ethernet and grounding system as per manufacturer's recommendations.
2. Connect automatic control valves to controller(s) in sequence as shown on Drawings.
3. Install all exposed wires to a minimum of twenty-four inches (24") beyond controller within a UL approved rigid conduit.

B. Master Valves and Flow Sensor

1. Master Valve: Install as per manufacturer's recommendation. Connect master valve wiring to the automatic controller. Install wire in a conduit. Wire is not to have any splices between the valve and the controller.
2. Connect Master Valve to decoder cable using a single-station line decoder.
3. Flow Sensor: Install as per manufacturer's recommendation. When using a "saddle" installation, install at the correct depth in the pipe and orientate the paddle properly for accurate reading of flow. Connect flow sensor wire to the automatic controller. Install wire in a conduit. The wire is not to have any splices between the valve and the controller.
4. Connect Flow Sensor to decoder cable using a sensor decoder.

C. Reduced-Pressure Backflow-Prevention Device

1. Install where shown, per code, and per manufacturer's specification and written instructions.
2. Provide pipe supports and accessories as necessary to properly secure the assembly.

D. Booster Pump Assembly

1. Booster Pump: Install as per manufacturer's directions and as detailed on Drawings. Lay out piping in field for exact locations and/or connections.
2. Booster Pump Pad: Install on a level, raised utility pad so booster pump is set level. Encase anchor bolts in the concrete pad.
3. Piping Assembly: Lay out system plumb and level. Paint entire assembly, including the pipe supports. Use metal pipe for all exposed pipe and extend below the ground to the horizontal main line pipe.

4. Coordination: Lay out conduit for electrical components to minimize conduit above grade.

E. Control Wires

1. General: Install control wires beneath sprinkler main line whenever possible; tape wires to mainline pipe. Provide one spare wire for each controller.
2. Slack Wire: Provide eighteen inches (18”) of slack wire for each wire connected to automatic control valve. Slack wire shall be coiled and left in the valve box. Tape wires in bundles every ten feet (10’); do not tape wires in sleeves.
3. Expansion and Contraction: Snake wire in trench to allow for contraction of wire.
4. Wire Passing Under Existing or Future Paving or Construction: Encase in PVC Schedule 40 or galvanized steel conduit extending at least twelve inches (12”) beyond edges of paving or construction.
5. Wire Connections: Install wire connections in a waterproof sealing pack.
6. Wire Splicing: Permit splicing only on runs exceeding 500 feet. Locate all splices within valve boxes.
7. Wire Termination: Install wire in a valve box with eighteen inches (18”) of slack wire coiled and individually capped with approved waterproof sealing pack.
8. Spare Wire: Install two (2) spare wires along each wire path. If there is more than one wire path from the controller, the contractor to install two (2) spare wires per path. Provide eighteen inches (18”) of slack wire at each automatic control valve.

F. Decoder Cable

1. General: Install control wires beneath sprinkler main line whenever possible.
2. Slack Cable: Provide eighteen inches (18”) of slack cable at each automatic control valve. Slack cable shall be coiled and left in the valve box.
3. Expansion and Contraction: Snake cable in trench to allow for contraction of cable.
4. Cable Passing Under Existing or Future Paving or Construction: Encase in PVC Schedule 40 or galvanized steel conduit extending at least twelve inches (12”) beyond edges of paving or construction.
5. Connections: Install cable connections in a waterproof sealing pack.
6. Splicing: Permit splicing only on runs exceeding 500 feet. Locate all splices within valve boxes.
7. Cable Termination: Install cable in a valve box with eighteen inches (18”) of slack cable coiled and individually capped with approved waterproof sealing pack. Ground cable at all cable terminations.

G. Trace Wire

1. General: Install trace wire above sprinkler main line whenever possible; tape wire to mainline pipe at 10’ intervals to ensure the wire remains adjacent to the pipe.
2. Wire Connections: Install wire connections in a waterproof sealing pack.
3. Trace wire access points shall be accessible at all automatic control valves.
4. At all mainline end caps, a minimum of six feet (6’) of tracer wire shall be coiled and secured to the cap for future connections. The end of the tracer wire shall be spliced to the wire of a six-pound zinc anode and is to be buried at the same elevation as the irrigation mainline.

5. Testing: The contractor shall perform a continuity test on all trace wires in the presence of the client. If the trace wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire.

H. Automatic Control Valves and Quick Coupler Valves

1. Install where shown and where practical; place no closer than twelve inches (12”) to walk edges, building walls, or fences. Refer to detail for example.
2. Thoroughly flush mainline before installing valve.
3. Install valves in ground cover areas where possible. Valves shall be installed with lid flush to finish grade of soil. Upon acceptance of 90-day maintenance period, contractor shall cover boxes with bark mulch.

I. Piping

1. General: Install in conformance with reference standards, manufacturer’s written directions, as shown on Drawings and as herein specified.
2. Workmanship:

   a. General: Install sprinkler irrigation equipment in planted areas throughout the site.
   b. Coordination: Organize location of sleeves with other trades as required.

3. Pipeline Assembly:

   a. General:

      1.) Cutting: Cut pipe square; remove rough edges or burrs.
      2.) Solvent-welded Connections: Use materials and methods recommended by the pipe manufacturer.
      3.) Brushes: Use non-synthetic brushes to apply solvents and primer.
      4.) Cleaning: Clean pipe and fittings of dirt, moisture, and debris prior to applying solvent or primer.
      5.) Assembly: Allow pipe to be assembled and welded on the surface or in the trench.
      6.) Expansion and Contraction: Snake pipe from side to side of trench to allow for expansion and contraction.
      7.) Location: Locate pipes as shown on Drawings except where existing supply valves, utilities or obstructions prohibit or where slight changes are approved to better suit field conditions.

   b. Elastomeric Seal (Gasket) Joints:

      1.) General: Assemble in strict conformance with the pipe manufacturer’s instruction.
      2.) Rubber Rings: Use rubber rings specific for water service systems.

3.) Cleaning: Thoroughly clean ring and groove of dirt, moisture and debris using a clean, dry cloth. Do not use solvents, lubricants, cleaning fluids or other material for cleaning.
4.) Seating: Properly seat ring in groove.
5.) Spigot: Clean spigot-end of pipe as in "Cleaning" above prior to applying lubricant recommended by pipe manufacturer. Insert spigot into bell and seat to full depth required.

c. Connections:

1.) Threaded Plastic Pipe Connection:

a) Use Teflon tape or pipe joint compound.
b) When assembling to threaded pipe, take up joint no more than one full turn beyond hand-tight

2.) Metal Valves and Plastic Pipe: Use threaded plastic male adapters.
3.) Metal to Metal Connections:

c) Use specific joint compound or gasket material for type of joint made. Where pipe of dissimilar metals are connected, use dielectric fittings.
d) Where assembling, do not allow more than three full threads to show when joint is made up.

4.) Where assembling soft metal (brass or copper) or plastic pipe, use strap-type friction wrench only; do not use a metal-jawed wrench.
5.) Threading:

a) Do not permit the use of field-threading of plastic pipe or fittings. Use only factory-formed threads.
b) Use factory-made nipples wherever possible. Permit the use of field-cut threads in metallic pipe only where absolutely necessary. When field-threading, cut threads accurately on axis with sharp dies.
c) Use pipe joint compound for all threaded joints. Apply compound to male thread only.

d. Sleeves and conduits:

1.) Use sleeves of adequate size to accommodate retrieval for repair of wiring or piping and extend a minimum of twelve inches (12") beyond edges of walls or paving.
2.) Provide removable, non-decaying plug at end of sleeve to prevent entrance of soil.

e. Unions: Locate unions for easy removal of equipment or valve.
f. Joint Restraints: Install per manufacturer's recommendations.
g. Capping: Plug or seal opening as lines are installed to prevent entrance materials that would obstruct pipe. Leave in place until removal is necessary for completion of installation.
h. Drip Irrigation Tubing: Install as per Drawings.

J. Sprinkler Heads

1. Sprinkler heads: Locate as shown on the Drawings except where existing conditions prohibit, or slight changes are approved to achieve as good or better coverage under the same conditions. Do not allow sprinkler head spacing to exceed the maximum shown on the Drawings. Plumb heads.
2. Handling, Assembly of Pipe, Fittings, and Accessories: Allow only skilled tradesmen to handle and assemble pipe, fittings and equipment. Keep interior of pipes, fittings and accessories clean at all times. Close ends of pipe immediately after installation; leave closure in place until removal is necessary for completion of installation. Do not permit bending of pipe.
3. Flushing: Remove end heads and operate system at full pressure until all rust, scale, and sand is removed. Divert water to prevent ponding or damage to finished work.
4. Coverage: Accept responsibility for full and complete coverage of irrigated areas to satisfaction of Landscape Architect and make necessary adjustments to better suit field conditions at no additional costs to Owner.

3.04 CONSTRUCTION

A. Grading

1. Install all irrigation features to their finished grade and at depths indicated. Complete and /or accommodate all rough grading and/or finish grading before commencing with trenching.

B. Layout

1. Lay out work as accurately as possible to Drawings. Drawings are generally diagrammatic to extent that swing joint offsets and fittings are not shown. Record all changes on the Record Drawings.
2. Do not willfully install the irrigation system as shown on Drawings when it is obvious, in the field, that obstructions or other discrepancies exist which may not have been considered in the design. Notify Owner's Representative of discrepancies before proceeding.

C. Excavating And Trenching

1. General: Perform excavations as required for installation of work included under this Section, including shoring of earth banks to prevent cave-ins. Restore surfaces, existing underground installations, etc., damaged or cut as result of this work to their original condition and in a manner approved by the Landscape Architect.
2. Width:

   a. Make trenches wide enough to allow a minimum of six inches (6") between parallel pipelines and three inches (3") between side of pipe and side of trench. Do not allow stacking of pipe within trench.
   b. When second spare mainline is installed alongside the first mainline, allow for a minimum of twelve inches (12") horizontally between the two pipes.

c. Allow a minimum clearance of twelve inches (12”) in any direction from parallel pipes of other trades.

3. Preparation of Excavations: Remove rubbish and rocks from trenches. Bed pipe on a minimum of three inches (3”) of clean, rock-free soil to provide a firm, uniform bearing for entire length of pipeline. Cover pipe with a minimum of three inches (3”) of clean, rock-free soil. If clean, rock-free soil is not available, use sand for pipe bedding and three inches (3”) of backfill above the pipe. The remainder of the trench backfill material can be native soil. Do not allow wedging or blocking of pipe.
4. Minimum depth of cover: Unless shown otherwise, provide the following minimums:

   a. Mainline: twenty-four inches (24”) cover.
   b. Lateral line: twelve inches (12”) cover for spray heads, and eighteen inches (18”) cover for rotor heads.

5. Conflicts with other trades:

   a. Hand-excavate trenches where potential conflict with other underground utilities exist.
   b. Where other utilities interfere with irrigation trenching and piping work, adjust the trench depth as instructed by Owner’s Representative.

D. Thrust Blocks

1. To resist system pressure on ring-tite PVC pipe and PVC fittings, provide thrust blocks at any change of direction, change of size, dead end, and/or valves at which thrust develops when closed. See thrust block details for examples.
2. Use cast-in-place concrete and size thrust blocks based on an average soil-safe bearing load of 700 lbs. per square foot.
3. Form thrust blocks in such a manner that concrete comes in contact only with the fittings. Place thrust block between adequately compacted soil and the fitting.
4. Thrust blocks are to be constructed of concrete with a minimum of 2500psi.
5. Thrust blocks are to be free, separate, and independent of adjacent or nearby thrust blocks.

E. Backfill And Compacting

1. General: Do not begin until hydrostatic tests are completed. When system is operating and after required tests and inspections have been made, backfill trenches under paving areas to the compaction rate specified in Section 31 00 00 – Earthwork.
2. Place backfill in six-inch (6”) layers and compact with an acceptable mechanical compactor.

   a. Compact backfill material in landscape areas to eighty-five percent (85%) maximum dry density of the soil.
   b. If settlement occurs along trenches, make adjustments in pipes, valves, and sprinkler heads, soil, sod or paving as necessary to bring the system, soil, sod or

paving to the proper level or the permanent grade, without additional cost to the Owner.

3. Excess Soil: Remove all rocks, debris, and excess soil that results from sprinkler irrigation trenching operations, landscape planting, and soil preparation operations off site at no additional cost to the Owner. If soil meets topsoil requirements in Section 31 00 00 – Earthwork, it may be used for finish grading.
4. Finishing: Dress-off areas to eliminate construction scars.

F. Flushing Lines

1. Thoroughly flush lines prior to installing valves, performing hydrostatic testing, or installing sprinklers. Divert water to prevent washouts.

G. Concrete Work

1. Underground anchors and pads for valves boxes are included under this Section of Specifications. Concrete shall have a minimum strength of 2500 psi. The slump test shall be a four inch (4”) maximum slump. At twenty-eight days, the concrete shall have a minimum strength of 2500 psi. Use materials and mix in accordance with ASTM C 94. Refer to Section 32 16 00 - Site Concrete.

3.05 FIELD QUALITY CONTROL

A. Visual Inspection: Verify that all pipe is homogenous throughout and free from visual cracks, holes, or foreign materials. Inspect each length of pipe. All materials are subject to impact test at the discretion of the Landscape Architect.

B. Hydrostatic Tests – Open Trench:

1. Center-load piping with a small amount of backfill to prevent arching or slipping under pressure.
2. Request the presence of the Project Inspector in writing at least forty-eight hours in advance of testing.
3. At no additional cost to Owner, test in the presence of the Project Inspector.
4. Apply continuous static water pressure of 100 psi when welded plastic joints have cured at least twenty-four hours, and with the risers capped, as follows: test main lines and submains for four hours; test lateral lines for two hours.
5. Repair leaks resulting from tests; and repeat tests.
6. Test to determine that all sprinkler heads function according to manufacturer's data and give full coverage according to intent of Drawings. Replace any sprinklers not functioning as specified with ones that do, or otherwise correct system to provide satisfactory performance.

C. Continuity Testing: Test locating device and control wires for continuity prior to and after back-filling operations.

3.06 ADJUSTING

A. Adjusting System: Prior to acceptance, satisfactorily adjust and regulate entire system. Set watering schedule on controller appropriate to types of plants and season of year. Adjust remote control valves to operate sprinkler heads at optimum performance based on pressure and simultaneous demands through supply lines.

B. System Layout: Provide reduced prints of Record Document irrigation plans, laminated in four (4) mil. plastic, of size to fit controller door. Enlarge remote-control valve designations as necessary for legibility. Color-code areas covered by each station. Affix plans to inside of controller door.

C. Instructions: Upon completion of work, instruct maintenance personnel on operation and maintenance procedures for entire system.

D. Flow Charts: Record and prepare an accurate flow-rate chart for each automatic control valve.

3.07 CLEANING

A. Remove debris resulting from work of this Section.

END OF SECTION

SECTION 32 90 00

LANDSCAPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Scope of Work: Furnish all labor, materials, tools, equipment, and transportation required to perform and complete the following work as specified herein:
2. Soil Preparation and Fertilization
3. Planting
4. Hydroseeding and/or Sodding
5. Weed Control
6. Decomposed Granite
7. Infield Mix
8. Mulch
9. Clean-up
10. Guarantee
11. Work not included in this Section: Landscape elements such as concrete walks, fencing, outdoor lighting, rough grading, and clearing are not a part of this Section unless shown on the landscape Drawings.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 31 00 00 – Earthwork.
3. Section 32 80 00 – Irrigation.

1.02 SUBMITTALS

A. See Section 01 33 00 – Submittal Procedures for additional requirements.

B. Plant Material: Within fifteen (15) days after award of contract, locate plant materials required for construction. Ensure that trees and shrubs are contract- grown from a certified nursery. Notify Owner's Representative of plant material "tied off" for review at selected nursery. If specified material is not obtainable, submit the following to Owner's Representative: proof of non-availability, proposal for use of equivalent material, photographs of alternative choices of plant material. Include clear, written description of type, size, condition, and general character of plant material.

C. Data Sheets: Provide product data for each type of landscape material indicated in the Drawings and Specifications.

D. Samples: Submit samples of the following materials to Landscape Architect for approval:

1. Soil amendment: (3) one-quart zip-locked plastic bags.
2. Bark Mulch: (3) one-quart zip-locked plastic bags.
3. Imported Topsoil: (3) one-quart zip-locked plastic bags. (if needed)
4. Baseball Infield Mix: (3) one-quart zip-locked plastic bags.
5. Decomposed Granite: (3) one-quart zip-locked plastic bags.

E. Provide soils analysis reports prepared by a qualified soils laboratory in compliance with the Soil Testing Requirements under "Soil Testing" in Part 3.02 of this Section.

F. Prior to planting, submit copies of all trucking or packaging tags for all soil amendment, fertilizer and other additives to Landscape Architect so the quantities can be verified.

G. Record Drawings: Upon completion of work, and as a precedent to final payment, deliver to Owner's Representative one complete set of reproducible originals of Drawings showing work exactly as installed.

1.03 QUALITY ASSURANCE

A. Qualifications: Work must be completed by a licensed Landscape Contractor. Provide proof of five years of continuous experience in landscaping and irrigation of projects of similar size (+\-20% of the construction cost) and scope for education campuses. Contractor to have a minimum of two projects either completed or in construction in the last five years.

B. Contractor shall be a certified installer of DuraEdge infield mix.

C. Work Force: Ensure that an experienced foreman is present at all times during installation. Keep the same foreman and workers on the job from commencement to completion.

D. Reviews: Specifically request reviews of all items listed below in "Inspection Requirements" prior to progressing to the next level of work. The Owner's Representative reserves the right to inspect and reject material, both at place of growth and at site, before and/or after planting, for compliance with requirements for name, variety, size and quality.

E. Reference Standards: Meet or exceed Federal, State and County laws requiring inspection of all plants and planting materials for plant disease and insect control.

F. Delivery, Storage, and Handling:

1. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.
2. Bulk Materials:

a. Do not dump or store bulk materials near structures, utilities, walkways or pavements, or on existing turf areas or plants.
b. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

c. Accompany each delivery of bulk fertilizers [,lime,] and soil amendments with appropriate certificates.

G. Plant Material:

1. Conform to the current edition of Horticultural Standards for quality of Number 1 grade nursery stock as adopted by the American Association of Nurserymen. Conform to sizes specified on plant legend. Select plants which have a natural shape and appearance.
2. Select only plants that are true to name, and tag one of each bundle or lot with the name of the plant in accordance with the standards of practice of the American Association of Nurserymen. In all cases, botanical names shall take precedence over common names.
3. Tag each plant of a patented variety with the variety and identification number, where applicable, as it is delivered to the job site.
4. Select only plants which have been nursery-grown in accordance with good horticultural practices and which have been grown under climatic conditions similar to those in the locality of the project for at least one year.
5. Select only plants which are typical of their species or variety; have normal habits of growth; are sound, healthy, vigorous, well-branched and densely-foliated when in leaf; are free of disease, insect pests, eggs or larvae; and have a healthy and well-developed root system.
6. Select only container stock that has been grown in the containers in which delivered for at least six (6) months, but not over two (2) years. Provide samples to show that there are no root-bound conditions.
7. Do not use plants that are severely pruned or headed-back to meet size requirements.
8. Do not plant container-grown plants that have cracked or broken balls of earth when taken from the container. Remove canned stock carefully from cans after containers have been cut on two sides with tin snips or other approved cutter.
9. Coordinate a time for the Landscape Architect to inspect the plants upon their delivery to the project site.
10. At any time prior to final acceptance, be prepared to replace any plants that are rejected by the Owner's Representative because of physical damage to the plant.
11. Do not remove container-grown stock from containers before time of planting.
12. Be prepared to replace plants which are rejected by the Owner's Representative for the following reasons:

    a. Trunk bark damage caused by sunburn,
    b. Trunk bark wounds caused by rubbing stakes or ties,
    c. Trunk bark damage caused by ties that have girdled the tree,
    d. Tree head development that is lopsided and not symmetrical in form,
    e. Tree branches that cross or touch,
    f. Tree branches with double leaders (unless multi-trunk trees are specified).

13. Stake shrubs with one-inch by one-inch by eighteen-inch (1"x1"x18") stakes in such manner that the stakes are not visible, and tie to upright position if they lean and/or are not growing in a vertical position.
14. Furnish quantities necessary to complete the work as shown on the Drawings and, if necessary, make up for any discrepancies in the quantities given in the Plant List at no additional cost to Owner.

H. Decomposed Granite with Binder Mock-up:

1. Install 4 ft wide x 10 ft long mock-up of decomposed granite with Stabilizer additive at location as directed by owner's representative for review and acceptance prior to placement of decomposed granite.

I. Comply with the requirements of Section 01 77 00 – Closeout Procedures.

1.04 INSPECTION REQUIREMENTS

A. Landscape Architect reserves the right to examine and reject plant material both at place of growth and at site, before and after planting, for compliance with requirements of name, variety, size, and quality.

B. Request and hold a pre-construction meeting prior to beginning the work of this Section. Parties required to be in attendance are the Landscape Contractor, Project Inspector, Owner's Representative, and Landscape Architect.

C. Obtain verification from Project Inspector for the following at the appropriate times during construction and prior to further progression of work in this Section:

1. Rough grading is to tolerances specified in Section 31 00 00 – Earthwork.
2. The placement of landscape backfill material is as specified in this Section.
3. Prior to the commencement of the work specified in this Section, the coverage and operation of the sprinkler irrigation system are as specified in Section 32 80 00 - IRRIGATION.
4. The soil amendment does not include any metal fragments. (Obtain a letter from the manufacturer stating that the material submitted for use on this project has no metal or foreign objects. Submit this letter as part of the Data Sheet submittal package [see "Submittals and Substitutions" in this Section])
5. Required Test: For each load of soil amendment delivered to the site, spread at least two cubic yards (2 cy) of material onto a paved surface approximately two inches (2") deep. Pass a magnetic rake over the material in two directions. If any metal is found, test the entire load in the same manner. Perform all testing in the presence of the Project Inspector.
6. Soil amendments, fertilizer, bark mulch and materials used for hydroseeding have been delivered to the site by the supplier, the invoices from the supplier indicate the project name and quantities delivered, and the Project Inspector has received copies of all such documents.
7. Prior to planting, amendments and conditioners have been incorporated as per pre-planting recommendations, and planting areas have been made ready to receive planting.

D. In case of failure to obtain any verification by the Project Inspector as required above, remove and replace work as necessary to obtain the verification at no additional cost to the Owner.

E. Beginning of Maintenance Period: Verify all work is complete, then request and hold a meeting to include the Landscape Architect, Project Inspector, Architect and Owner's Representative for authorization to begin the landscape maintenance period.

F. End of Maintenance: Verify that all work is complete and acceptable, and that the maintenance has been completed per specifications; and continue to provide landscape maintenance until the Owner's Representative has accepted the work.

1.05 PROJECT/SITE CONDITIONS

A. Provide protection for persons and property throughout progress of work. Use temporary barricades as required. Proceed with work in such manner as to minimize spread of dust and flying particles and to provide safe working conditions for personnel. Store materials and equipment where directed.

B. Existing Construction: Execute work in an orderly and careful manner to protect paving, work of other trades, and other improvements.

C. Existing Utilities: Provide protection for existing utilities within construction area. At no additional cost to Owner, repair any damages to utility lines that occur as a result of this work.

D. Landscaping: Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods.

E. Paving: Maintain cleanliness of paving areas and other public areas used by equipment, and immediately remove spillage; remove rubbish, debris, and other material resulting from landscaping work, leaving site in a safe and clean condition.

F. Planting Schedule / Environmental Requirements

1. Install, establish, and maintain all lawn areas for a minimum of ninety (90) days prior to date of substantial completion. Coordinate schedule with other work and overall project schedule. Failure to install lawn areas by this date shall result in assessment of liquidated damages.
2. Proceed with work in an orderly and timely manner to complete installation of landscaping within contract limits.
3. Planting Season Limits: Do not plant when grounds are wet or temperature is below 25° F. Do not proceed with any soil preparation and fertilization if all planting cannot be completed within Planting Season Limit.

1.06 WARRANTY

A. The guarantee period for lawn and plant material shall be the duration of the landscape maintenance period, from commencement until final acceptance of the work of this Section. See Division 01 for other applicable guarantee requirements.

B. During the guarantee period, repair and/or replace plants and lawn not in satisfactory growing condition, as determined by Owner's Representative, without additional cost to Owner. Plants are to be replaced as per Section 32 01 90 – Landscape Maintenance.

C. DuraEdge Infield Mix installation shall be warrantied for 5 years.

1.07 MAINTENANCE

A. Refer to Section 32 01 90 – Landscape Maintenance

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use material in new and perfect condition as specified. Any deviations or substitutions from the Specification and Drawings must first be approved by Owner's Representative in writing prior to use.

B. Topsoil: Fertile; friable; natural loam surface soil; reasonably free of subsoil, clay lumps, brush, weeds and other litter; and free of roots, stumps, stones/rocks, and other extraneous or toxic matter harmful to plant growth.

C. Soil Amendment: One-percent nitrogen-impregnated bark product with a ninety-percent (90%) bark base and zero to one-quarter inch (0-1/4") particle size, or approved equivalent. Do not spread until testing requirements have been satisfied.

D. Fertilizer/Soil Conditioner: Gro-Power Plus or approved equal.

E. Fertilizer for Trees and Shrubs: Seven-gram Gro-Power Planting Tablets (12-8-8 NPK) or approved equal.

F. Vitamin B-1: "Superthrive", "Liquinox Start", "Cal-Liquid", or approved equal.

G. Bark Mulch: Untreated, shredded cedar.

H. Tree-staking System: As indicated on Drawings.

I. Pre-Emergent Weed Control: Oxadiazon, "Treeflan", "Ronstar 2G", "Surflan" (Elano Products Company), or approved equal.

J. Decomposed Granite:

1. Reddish-brown in color.
2. A mixture of fines to three-eighths inch (3/8") size particles with no clods.
3. Free of vegetation, other soils, debris and rocks, and of such nature that it can be compacted readily under watering and rolling.

K. Decomposed Granite Binder: Shall be Stabilizer by Stabilizer Solutions.

L. Infield Mix: DuraEdge Classic Infield Mix, or approved equal.

M. Infield Topdressing: DuraEdge Play Ball, or approved equal.

N. Fieldstones: As indicated on Drawings.

O. River Cobble: As indicated on Drawings.

P. Erosion Control Blankets: The erosion control/re-vegetation blanket shall be lightweight and comprised primarily of straw, excelsior, virgin wood fiber, jute or coconut fibers. It shall conform easily to the soil surface allowing vegetation to emerge unimpeded, contain no growth-inhibiting additives and shall be free of weed-seed and other contaminants. The blanket shall be designed to be left in place to degrade. Include manufacturer's recommended biodegradable staples, six inches (6") long.

Q. Jute Mesh: Shall be of a uniform, open, plain weave, flame-retardant mesh, made from unbleached single jute yarn. The shall be of loosely twisted construction and shall not vary in thickness by more than one-half its normal diameter. Jute mesh shall be furnished in rolled strips and shall meet the following requirements.

1. Width: 48 inches, with a tolerance of +/- one inch.
2. 78 warp ends per width, 41 weft ends per yard.
3. Weight shall average 1.22 pounds per linear yard, with a tolerance of +/- 5%.
4. Jute Mesh staples: 18" long, #10 steel wire.

R. Weed Fabric: As indicated on Drawings.

S. Header Boards: As indicated on Drawings.

T. Root Barrier: As indicated on Drawings.

U. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, three ounces per square yard (3 oz/sq. yd.) (101 g./sq. m.) minimum, composed of fibers formed into a stable network so that fibers retain their relative positions. Fabric shall be inert to biological degradation and resistant to naturally-encountered chemicals, alkalis, and acids.

V. Nursery Plant Stock:

1. As indicated on Drawings. Do not remove container-grown stock from containers until planting time. Plants shall be true to name.
2. Healthy, shapely, well-rooted, not pot-bound, free from insect pests or plant diseases and properly "hardened off" before planting. Replace plants that are not alive or are not in satisfactory growing condition, as determined by the Landscape Architect, without additional cost to Owner. The Landscape Architect may reject plants before and/or after planting.
3. Labeled. Label at least one tree and one shrub of each species with a securely-attached, waterproof tag bearing legible designation of botanical and common name.

W. Lawn Sod:

1. April 1st thru September 30th Installation: One Hundred percent (100%) Hybrid Bermuda.
2. October 1st thru March 31st Installation: One Hundred percent (100%) Hybrid Bermuda, overseeded with rye grass.

X. Lawn Hydroseed: Premium, new crop seed, delivered to site in original, unopened containers bearing a dated guaranteed analysis. Hydroseed may be installed April 15 thru July 31st only. Hydroseed mixture shall be as follows:

1. Seed: Double Play Bermuda Grass seed blend
2. Starter Fertilizer: 16-20-0 with biosolids or approved equal.
3. Wood Fiber Mulch: As manufactured by Conwed or approved equal.
4. Soil Binding Agent: Polyacrylamide or approved equal.
5. Herbicide: Tenacity or approved equal.

Y. Bermuda Sprigs: Healthy lateral living stems, rhizomes, or stolons, four to six inches (4” - 6”) long with leaves or a minimum of two nodes and attached roots free of soil.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the site, verify grade elevations, and observe conditions under which work is to be performed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Owner’s Representative.

B. Proceed with complete landscape work as rapidly as portions of the site become available, working within seasonal limitations for each kind of landscape work required.

C. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand-excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

D. When conditions detrimental to sod or plant growth are encountered, such as rubble fill, adverse drainage condition, or other obstructions, notify the Owner’s Representative before planting.

3.02 PREPARATION

A. Soil Testing

1. Coordinate soil testing in an expeditious and timely manner as required for on-site topsoil materials. Contract with a soil laboratory and include cost of sampling and testing in contract price. Take one (1) sample for every 5,000 square feet of landscape area up to a maximum of six (6) samples under the direction of and in the presence of the Owner’s Representative.
2. Submit each sample, according to the quantity of soil required by testing laboratory, to a competent laboratory approved by the Owner’s Representative.
3. Provide analysis of soil samples for pH, salinity, ammonia, phosphate, potassium, calcium, magnesium, boron, and sodium levels. Provide appraisal of chemical properties, including particle size determination, and recommendations for types and quantities of amendments and fertilizers.

B. Clearing of Vegetation:

1. If live perennial weeds exist on site at the beginning of work, spray with a non-selective systemic contact herbicide as recommended and applied by an approved licensed landscape pest control advisor and applicator. Leave sprayed plants intact for at least 15 days.
2. Clear and remove existing weeds by mowing or grubbing off all plant parts at least one-quarter inch (¼”) inch below surface of soil over entire areas to be planted.

C. Soil preparation:

1. Loosen soil in all planting areas, and on slopes flatter than 3:1 gradient, to a depth of six to eight inches (6" - 8”) below finish grade. All debris, foreign matter, and stones shall be removed prior to the placing of any fertilizers or conditioners. Soil preparation is for all shrub planting beds, lawn hydroseeded areas and sodded lawn areas.
2. Conduct the required soil tests and instruct the lab to include a minimum of the following soil improvements in the recommendation on the soils report.

    a. Soil Amendment: Two cubic yards (2 cy) per 1,000 square feet.
    b. Gro-Power Plus: One hundred fifty pounds (150 lbs) per 1,000 square feet.
    c. If the lab recommends less than six cubic yards (6 cy) of soil amendment, the excess bid amount shall be applied to the cost of any additional recommended soil improvements, or returned to the Owner as a credit

3. Apply amendments as follows, using rates recommended by the soils testing laboratory (the rates of amendments shown below are for bidding purposes only):

    a. Fertilizer/Soil Conditioner: Broadcast 150 pounds of Gro Power Plus per 1,000 square feet in all planting areas and rototill to a depth of six to eight inches (6” - 8”). Remove from the site any rock and debris brought to the surface by cultivations. “Cultipack” all areas to receive sod or hydroseed.
    b. Apply soil amendment to all planting areas at the rate of six cubic yards (6 cy) per 1,000 sf and rototill into the top six to eight inches (6” – 8”).

4. Upon completion of finish grading, request a review and obtain approval of Landscape Architect prior to commencement of planting or hydroseeding.

D. Finish Grading for all Planting areas

1. Refer to Earthwork Specification Section for Rough Grading.
2. Grade to elevations and contours shown on Drawings. Fill low spots with landscape backfill material and grade to surface drain in manner indicated on Drawings.
3. Finish-grade so that the entire area within the contract lines has a natural and pleasing appearance as specified and as directed by Landscape Architect.
4. Adjust sprinkler heads flush to finish grade in preparation to receive hydroseeding or one-half inch above finish grade in preparation to receive sod. Reset sprinkler heads flush to grade after turf has germinated.
5. Flag the sprinkler heads and valve markers.

E. Planting Pits for Trees:

1. Excavate pits with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage.
2. Set container-grown stock in center of pit on earth pedestal. Separate roots and/or prune roots as directed by Landscape Architect. In hot weather, pre-wet pit. Loosen outside roots from sides and bottom of root ball. When set, place additional backfill around base and sides of root ball. Work each layer to settle backfill and eliminate voids and air pockets. Water after placing final layer of backfill.
3. Loosen hard subsoil in bottom of excavation. Extend excavation as required to insure proper drainage from plant pits.
4. Fill excavated planting pits with water to half the depth of pit. Pits should drain within four hours (4 hrs). If planting pits do not drain, notify Project Inspector immediately. Do not proceed with planting until Landscape Architect has resolved a method to provide drainage.

F. Planting Pits for Shrubs/Groundcover:

1. Excavate pits and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage.
2. Loosen hard subsoil in bottom of excavation. Extend excavation as required to insure proper drainage from plant pits.
3. Fill excavated planting pits with water to half the depth of pit. Pits should drain within four hours (4 hrs). If planting pits do not drain, notify Project Inspector immediately. Do not proceed with planting until Landscape Architect has resolved a method to provide drainage.

3.03 INSTALLATION

A. Root Barrier

1. Root barriers location are specifically shown on the plan. If a tree is moved during construction to a location where root barrier is not shown on the plan, the following minimum requirements are to be met:

   a. Install root barrier where trees are planted within sixty inches (60”) of paving or other hardscape elements, such as walls, curbs, and walkways.
   b. Install root barrier continuously for a distance of five feet (5’) in each direction from the tree trunk, for a total distance of ten feet (10’) per tree. If trees are spaced closer, use a single continuous piece of root barrier.

2. Align root barrier vertically and run it linearly along and adjacent to the paving or other hardscape elements to be protected from invasive roots.
3. Position top of root barrier just below the top of adjacent hardscape element but above finish grade of the soil so that is visible.
4. If there are concrete spoils or overpour that is impeding the root barrier from being installed directly adjacent to the hardscape element, the contractor is to remove the extra concrete in a manner that does not damage the integrity of the hardscape element.

5. Do not distort or bend root barrier during construction activities.
6. Do not install root barrier surrounding the root ball of tree.

B. Lawn Hydroseeding:

1. Do not begin hydroseeding until finish-grading has been checked by Landscape Architect. If work is rejected due to failure to obtain Landscape Architect's approval prior to hydroseeding, redo rejected work at no additional cost to Owner.
2. General: Hydroseeding is an artificial planting process which provides vegetation to an area by using a mixture of soil conditioner/fertilizer, seed, binder, and wood fiber mulch. This mixture should be of such character that it will disperse into a uniform slurry when mixed with water in a mechanical mixer.
3. Equipment: Use a standard hydraulic mulching machine with a continuous agitation system that keeps material in uniform suspension throughout mixing and distribution cycles and with a minimum mixing tank capacity of 500 gallons (3,000+ sq. ft. of coverage).
4. Mix per 1,000 square feet:

a.	Lawn Seed	X lbs.
b.	Starter Fertilizer	25.0 lbs.
c.	Wood Fiber Mulch:	45 lbs.
d.	Soil Binding Agent:	3 oz.
e.	Herbicide:	0.7 oz.

5. Application: Spray the slurry mix, under pressure, uniformly over the soil surface in a one-step operation. Protect adjacent paving, building walls, etc.
6. Clean any overspray from surfaces at end of each day's work.
7. Permit slurry to "set" approximately twenty-four hours (24 hrs.) before watering. Once watering has begun, do not allow newly hydroseeded areas to dry out.

C. Irrigated Bio-Swale Hydroseeding:

1. Do not begin hydroseeding until finish-grading has been checked by Landscape Architect. If work is rejected due to failure to obtain Landscape Architect's approval prior to hydroseeding, redo rejected work at no additional cost to Owner.
2. General: Hydroseeding is an artificial planting process which provides vegetation to an area by using a mixture of soil conditioner/fertilizer, seed, binder, and wood fiber mulch. This mixture should be of such character that it will disperse into a uniform slurry when mixed with water in a mechanical mixer.
3. Equipment: Use a standard hydraulic mulching machine with a continuous agitation system that keeps material in uniform suspension throughout mixing and distribution cycles and with a minimum mixing tank capacity of 500 gallons (3,000+ sq. ft. of coverage).
4. Mix per 1,000 square feet:

a.	Lawn Seed	3.25 lbs.
b.	Starter Fertilizer	20.0 lbs.
c.	Wood Fiber Mulch:	75.0 lbs.

5. Application: Spray the slurry mix, under pressure, uniformly over the soil surface in a one-

step operation. Protect adjacent paving, building walls, etc.

6. Clean any overspray from surfaces at end of each day's work.
7. Permit slurry to "set" approximately twenty-four hours (24 hrs.) before watering. Once watering has begun, do not allow newly hydroseeded areas to dry out.

D. Non-Irrigated Bio-Swale Hydroseeding:

1. Do not begin hydroseeding until finish-grading has been checked by Landscape Architect. If work is rejected due to failure to obtain Landscape Architect's approval prior to hydroseeding, redo rejected work at no additional cost to Owner.
2. General: Hydroseeding is an artificial planting process which provides vegetation to an area by using a mixture of soil conditioner/fertilizer, seed, binder, and wood fiber mulch. This mixture should be of such character that it will disperse into a uniform slurry when mixed with water in a mechanical mixer.
3. Equipment: Use a standard hydraulic mulching machine with a continuous agitation system that keeps material in uniform suspension throughout mixing and distribution cycles and with a minimum mixing tank capacity of 500 gallons (3,000+ sq. ft. of coverage).
4. Mix per 1,000 square feet:

a.	Lawn Seed	3.25 lbs.
b.	Starter Fertilizer	20.0 lbs.
c.	Wood Fiber Mulch:	75.0 lbs.

5. Application: Spray the slurry mix, under pressure, uniformly over the soil surface in a one-step operation. Protect adjacent paving, building walls, etc.
6. Clean any overspray from surfaces at end of each day's work.

E. Lawn Sod:

1. Cultivate all lawn areas to a depth of six inches (6"). If cultivation does not break lumps, pull a spike-toothed harrow over the area behind the tractor.
2. Give all lawn areas that are to be sodded a smooth finish to prevent pockets. Do not allow any abrupt changes of surface. Prior to installation of sod, roll the grade with a 200-pound water-ballast roller. Request that the lawn grade be inspected and approved by the Landscape Architect prior to sodding to determine its suitability for planting. Obtain such approval prior to commencing sodding operations.
3. Do not take heavy objects (except lawn rollers) over lawn areas after they have been prepared for planting.
4. Completely lay the sod within twelve hours (12 hrs.) of delivery. Do not leave sod on pallets in the hot sun longer than necessary.
5. Unroll sod carefully. Lay sod tight without any visible open joints, and without overlapping; stagger end joints twelve inches (12") minimum. Do not stretch or overlap sod pieces. Do not place sod in pieces smaller than twenty-four inches (24") in length by width of roll.
6. When new sod is to match existing turf, cut the edge of the existing turf in a series of straight lines that will accept new sod rolls in full width of the sod roll. Make the transition of grade between existing turf and new sod to be seamless with no change in elevation.
7. Immediately after laying sod, roll lawn areas with a 200-pound water-ballast roller.

8. Trim sod to conform to lawn shapes designated in Drawings.
9. On slopes of six inches (6”) per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at a maximum of two feet (2’) on center. Drive pegs flush with soil portion of sod.
10. Ensure that finished appearance is that of one continuous lawn.
11. Do not lay whole lawn before watering. When a conveniently large area has been sodded, water lightly to prevent drying. Continue to lay sod and to water until installation is complete.
12. All sod areas must be approved by Landscape Architect.
13. Water the complete lawn surface thoroughly. Moisten soil at least eight inches (8”) deep. Repeat sprinkling at regular intervals to keep sod moist at all times until rooted. After sod is established, decrease frequency and increase amount of water per application as necessary.

F. Lawn Bermuda Sprigging: Plant freshly shredded sod sprigs after finish grade is properly prepared and thoroughly soaked a day in advance. Plant sprigs at a rate of [rate] deep. Place individual sprigs with roots and portions of stem in moistened soil [rate] apart in rows [rate] apart, and fill furrows without covering growing tips. Lightly roll and firm soil around sprigs after planting. Water thoroughly and keep soil moist. Weed by hand or hoe. Do not treat sprig area with herbicide.

G. Trees, Shrubs, and Groundcover:

1. Lay out individual tree and shrub locations and areas for multiple plantings. Stake the locations, outline the areas, and secure the Owner’s Representative's acceptance before beginning the planting work. Make minor adjustments as requested.
2. Scarify root ball prior to planting. Plant in holes twice the diameter of the root ball and to a depth equal to the container’s height. Place the shrub and/or groundcover so the top of the root ball is one inch (1”) higher than the surrounding grade; place the tree so that the crown of the trunk is two inches (2") higher than the surrounding grade. Set container-grown stock in center of pit. In hot weather, pre-wet the pit. When set, place additional backfill around base and sides of root ball. Work each layer to settle backfill and eliminate voids and air pockets. Thoroughly compact lower half of backfill in plant pit. See staking or guying detail. Water after planting. Provide a berm or watering basin for each tree. Add Vitamin B-1, in the proper solution as recommended by the manufacturer, to the second watering of the basin.
3. Place fertilizer planting tablets in root zone and alongside each plant. Follow manufacturer's instructions for number of tablets to use for each container size.
4. See Drawings for additional information.
5. Grooming and Staking of Trees:

   a. Prune, thin-out and shape trees in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by Landscape Architect, do not cut tree leaders, and remove only injured or dead branches from flowering trees.
   b. Paint cuts over one-half inch (½”) in size with standard tree paint or compound, covering exposed, living tissue. Use paint that is waterproof, antiseptic, adhesive, elastic and free of kerosene, coal tar, creosote, and other substances harmful to plants. Do not use shellac.

c. Stake or guy trees immediately after planting, as indicated on Drawings.

6. Grooming of Shrubs:

a. Prune, thin-out and shape shrubs in accordance with standard horticultural practice. Prune shrubs to retain natural character and to accomplish their use in landscape design. The required plant size is its size after pruning.
b. Remove and replace excessively pruned or malformed new plants resulting from improper pruning.

7. Request review by the Landscape Architect after locating, but prior to planting all trees. Under the direction of the Landscape Architect, make slight adjustments to plant material location as necessary to reflect original intention of Drawings.

H. Weed Control

1. Apply pre-emergent weed control to all planting areas (except lawn) after completion of all planting and one complete watering. Follow manufacturer's directions. To prevent washing away of weed control, do not over-water after its application. Do not allow any weed control into lawn areas. Treat any existing noxious weeds, such as Johnson grass, with Roundup in successive treatments until all roots are destroyed, then remove all grass and roots. Notify Owner’s Representative of time of installation for verification of application.

I. Bark Mulch

1. Apply mulch at the rate of three inches (3") deep to all planting areas, exclusive of lawn, after the planting and weed control are completed. Twelve inches (12”) from planter edges, taper full depth of mulch to meet adjacent grades. Do not place mulch within three inches (3”) of trunk or stems.

J. Decomposed Granite

1. Prepare all areas to receive decomposed granite, and treat sub-grade with weed control.
2. Install a two-inch (2") lift, and wet and roll to compact to ninety percent (90%).
3. Install the remaining material to achieve the required thickness when it is wet and rolled.
4. Remove all weed grass and re-compact the surface by the end of the landscape maintenance period.

K. Decomposed Granite With Binder

1. General: Prepare all areas to receive decomposed granite, and treat sub-grade with weed control.
2. Placement:

a. Do not install during rainy conditions or below 40 degree Fahrenheit and falling.
b. After pre-blending, place the Stabilized decomposed granite on prepared sub-grade. Level to desired grade and cross section.

c. Water heavily for full-depth moisture penetration of the Stabilized pathway profile, 25 to 45 gallons of water per 1-ton must be applied. During water application randomly test for depth using a probing device, which reaches full depth.

3. Compaction:

a. Upon thorough moisture penetration, compact aggregate screening to 85% relative compaction by equipment such as; a 2 to 4-ton double drum roller or a 1,000-lb. single drum roller. The roller size will depend on the depth of the pathway. DO NOT use a vibratory plate compactor or vibration function on roller as vibration separates large aggregate particles. Do not begin compaction for 6 hours after placement and up to 48 hours.
b. If surface aggregate dries significantly quicker than subsurface material, lightly mist surface before compaction.
c. Take care in compacting decomposed granite when adjacent to planting and irrigation systems. Hand tamping with an 8” or 10” hand tamp recommended.

4. Inspection:

a. Finished surface of pathway shall be smooth, uniform and solid. There shall be no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material will not be present on the surface after installation, but may appear after use and according to environmental conditions. Pathway should remain stable underneath the loose granite on top. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

5. Repairs:

a. Excavate damaged area to the depth of the stabilized decomposed granite and square off sidewalls.
b. If area is dry, moisten damaged portion lightly.
c. Pre-blend the dry required amount of Stabilizer powder with the proper amount of decomposed granite in a concrete mixer.
d. Add water the pre-blended decomposed granite and stabilizer. Thoroughly moisten mix with 25 to 45 gallons per 1-ton of pre-blended material or to approximately 10% moisture content.
e. Apply moistened pre-blended decomposed granite to excavated area to finish grade.
f. Compact with an 8”-10” hand tamp or 250 to 300-pound roller. Keep traffic off area for 12 to 48 hours after repair has been completed.

6. Upon end of landscape maintenance period, all weed/grass shall have been removed and surface re-compacted.

L. Infield Mix

1. See section 1.03, Quality Assurance, for contractor qualifications.
2. Contractor shall layout the infield, identifying home plate, all bases, and pitching rubber. Install home plate, base pins and pitching rubber. If equipment is not specified locations to be marked with a ¾" diameter x 12" long galvanized pipe. Pipe to be buried in the ground, so the top is flush with finish grade.
3. Contractor shall layout edge of infield with white marking paint the edge of infield.
4. Infield mix to be thoroughly blended by the supplier prior to delivery to the site. Delivery tickets showing quantities and mixture shall be given to landscape architect.
5. When layout of infield has been completed and verified by landscape architect, contractor shall excavate all areas to receive infield mix to a 4" depth. Excess soil shall be distributed on site.
6. .Place the material in lifts of 2 to 3 inches and lightly compact until an optimum compaction between 85 and 90 percent is achieved on a standard proctor test (ASTM D 689-07). Scarify the surface to facilitate bonding of the next list and repeat until finish grade elevation is achieved. Completing this process as described will minimize settling and improve the performance of the product.
7. If unable to achieve optimum compaction, a light application of water may be needed.
8. For best results, the material shall be finish graded with a laser device that allows accuracy to +/- 1/8 inch. A slope of ½ percent to 1 percent shall be placed in the infield surface in order to facilitate surface drainage.
9. The finish surface of the infield shall be smooth and free from any visible dips, humps, bumps, or other blemishes which would hinder the removal of water through positive surface drainage. A finished elevation survey shall be conduction to assure proper installation.
10. Following successful inspection, topdressing shall be applied to the surface at a rate of 1 pound per square foot.

M. Erosion Control Blanket

1. When planting operations have been completed and finish-grade has been re-established, request review of surface grade, and obtain approval of Landscape Architect before installation of blanket. Install material as per Drawings.

N. Jute Mesh

1. Jute mesh shall be installed at the locations shown on the plans.
2. Jute mesh shall be placed after cultivation and before planting. Soil surface should be reasonably smooth, remove rocks or other obstructions that rise above the level of the soil. Jute mesh shall be placed loosely on the finish grade up and down the slope in a manner to fit the soil surface contour and shall be held in place staples driven vertically into the soil at approximately 24" spacing and no more than 12" when overlapping mesh. Jute mesh strips shall be overlap along the sides by at least 6" and if more than one roll is required going down the slope, the ends going down the slope should overlap by at least 3'. Ends of strips shall be tucked into the soil by at least 6".

3.04 CLEANING

A. During construction, keep the site free of rubbish and debris, and clean up the site promptly when

notified to do so. Take care to prevent spillage on streets from hauling and immediately clean up any such spillage and/or debris deposited on streets due to the work of this Section.

B. During all phases of the construction work, take all precautions to abate dust nuisance by clean-up, sweeping, sprinkling with water, or other means as necessary.

3.05 QUALITY CONTROL

A. Pre-maintenance review - At completion of this Section, work shall be reviewed to check conformance with Construction Documents. Acceptance shall mark beginning of the specified maintenance period. If acceptance is not given, a punch-list of items requiring attention will be issued to the contractor. One more review will be allowed after contractor certifies in writing that the punch-list has been completed. Punch-list shall be completed to the satisfaction of the District's Representative prior to commencement of the Specified Maintenance Period.

B. Refer to Section 32 01 90 – Landscape Maintenance.

END OF SECTION

SECTION 33 00 00

SITE UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:
1. Domestic water piping system.
2. Fire protection piping systems.
3. Sewer piping system.
4. Other water and sewer items that may be specified or shown on the drawings.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 01 50 00, Construction Facilities and Temporary Controls.
3. Section 31 23 33, Trenching and Backfilling.
4. Section 32 16 00, Site Concrete.
5. Section 33 00 00, Earthwork.
6. Section 31 31 00, Soil Treatment

1.02 REFERENCES AND STANDARDS

A. ANSI/ASTM D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.

B. ANSI/ASTM D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.

C. ANSI/ASTM D1557-02 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.

D. ANSI/ASTM D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).

E. ANSI/ASTM D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

F. CALTRANS Standard Specifications.

G. CAL-OSHA, Title 8, Section 1590 (e).

H. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

I. NFPA 13, 24 and 25, latest editions.

J. California State Health and Safety Code Section 116875, Lead Free Public Water Systems.

K. California Plumbing Code, latest edition.

1.03 SUBMITTALS

A. Refer to Section 01 33 00.

B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

C. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.

D. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

1.04 QUALITY ASSURANCE

A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the drawings to be salvaged and re-used.

1. Sun damaged or discolored PVC pipe will be rejected.

B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

C. The representatives of the Owner’s testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner’s testing lab representatives nor the testing by the Owner’s testing lab shall excuse the contractors or subcontractors for defects or deficiencies discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

D. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction or incorrect grades will be the responsibility of the contractor.

E. Per 2016 NFPA 13 provide Contractor's material and test certificate to the Owner, Architect, Project Inspector and Local Fire Authority.

1.05 FEES, PERMITS, AND UTILITY SERVICES

A. Obtain and pay for permits and service charges required for installation of Work. Arrange for required inspections and secure written approvals from authorities having jurisdiction.

B. Upon completion of work within right-of-way, provide copies of written final approval to the Architect.

1.06 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.07 PROJECT CONDITIONS

A. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

B. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.08 WARRANTY

A. Refer to General Conditions and Section 01 78 36.

1.09 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid

creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

1.10 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

1.11 RECORD DRAWINGS

A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.

B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.

C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.

D. Properly identify on as-builts and provide dimensions for all stubs for future connections. Provide concrete markers 6” dia. 12” deep, flush with finish grade at the ends of all stubbed pipes.

PART 2 – PRODUCTS

2.01 MATERIALS - GENERAL

A. Provide each item listed herein or shown on drawings of quality noted or approved equal. All material shall be new, full weight, standard in all respects and in first-class condition. Insofar as possible, all materials used shall be of same brand or manufacture throughout for each class of material or equipment. Materials shall be of domestic manufacture and shall be tested within Continental United States.

B. Grade or quality of materials desired is indicated by trade names or catalog numbers stated herein.

C. Dimensions, sizes, and capacities shown are minimum and shall not be changed without permission of Architect.

D. All materials in this section used for any public water system or domestic water for human

consumption shall be lead free.

1. For the purposes of this section, “lead free” means not more than 0.2 percent lead when used with respect to solder and flux and not more than 8 percent when used with respect to pipes and pipe fittings.
2. All pipe, pipe or plumbing fitting or fixtures, solder, or flux shall be certified by an independent American National Standards Institute (ANSI) accredited third party, including, but not limited to, NSF International, as being in compliance with this section.

E. All materials used for fire system piping shall be UL and FM approved.

2.02 VALVE BOXES

A. Provide at each valve 3” or smaller in size in ground an Oldcastle B1017 H20 rated valve box.
B. Provide at each valve 4” or greater in size in ground a Christy, Brooks, or equal to Christy G05CT.
C. All valve boxes shall have a cover marked for service, domestic water shall be marked “Water” and fire supply shall be marked “Fire”. Furnish extension handles for each size square nut valve, and provide “fork” handle for each size of “wheel handle” valve as required. Do not locate valve boxes in walk, or covered passages, curbs, or curb & gutters, unless necessary. If valve location is within concrete or asphalt paved surface valve box shall be as detailed on plans for such condition. Provide valve box extensions as required to set bottom of valve box to bottom of piping in which valve is installed. Provide Owner with set of special wrenches and/or tools as required for operation of valves.

2.03 PIPES AND FITTINGS

A. Sanitary Sewer: PVC sewer pipe and fittings with Ring-Tite joints, ASTM D3034 SDR35.

B. Domestic water Lines 3 1/2” and smaller: Type K copper tubing, hard temper, with wrought copper fittings.

C. Water lines 4” and larger: AWWA C-900 Class 150/DR18 with rubber gasket joints.

D. Fire lines 4” and larger: AWWA C-900 Class 200/DR14 with rubber gasket joints.

E. Solder: Lead Free. 95/5; 95% Tin / 5% Antimony.

F. Ductile Iron Pipe; Class 350, Cement Lined

G. Ductile Iron Pipe Fittings; AWWA C110, C153, Ebba Iron, Star Romac, Sigma, or approved equal.

H. Mechanical Fitting Bolts; Bolts and nuts shall be carbon steel with a minimum 60,000 psi tensile strength conforming to ASTM A 307, Grade A. Bolts shall be standard ANSI B1.1 Class 2A course threads. Nuts shall conform to ASTM A 563 and be standard ANSI B1.1, Class 2A course thread. All bolts and nuts shall be zinc coated.

I. Fasteners Anti-Rust Coatings; After assembly, coat all fasteners with an Asphaltic Bituminous coatings conforming to latest edition NFPA 24.

J. Ductile Iron Pipe Wrap; 8 mil polyethylene pipe wrap conforming to ANSI/AWWA C105/A21.5 standards.

K. Pipe Insulation; Pipe exposed to atmospheric conditions ½" thru 4" NPT; Johns Manville rigid fiberglass insulation, Micro Lok HP; Owens Corning Fiberglas SSL II; Conforming to ASTM C 612, Type 1A or type 1B.

L. Aluminum field applied pipe insulation jacket; comply with ASTM B209, ASTM C1729, ASTM C1371 Manufacturers; Childers Metals; ITW Insulation Systems Aluminum Jacketing; or an approved equal.

1. Finish shall be flat mill finish
2. Factory Fabricated Fitting Covers; 45 and 90 degree elbows, tee's, valve covers, end caps, unions, shall be of the same thickness and finish of jacket.
3. The fittings shall be composed of 2-pieces
4. Adhesives; per the manufacturers requirements
5. Joint Sealant; shall be silicone, and shall be aluminum in color.

M. Sewer Forced Main; HDPE, DR 11, color gray with green stripe by JM Eagle or approved equal.

2.04 SANITARY SEWER MANHOLES

A. Shall be constructed as shown on plan details.

2.05 CLEANOUTS

A. Cleanouts of same diameter as pipe up to 8" in size shall be installed in all horizontal soil and waste lines where indicated and at all points of change in direction. Cleanouts shall be located not less than 18" from building so as to provide sufficient space for rodding. No horizontal run over 100 feet shall be without cleanout whether shown on drawings or not.

B. All cleanout boxes shall be traffic rated with labeled lid, Christy G05CT or approved equal. Lid shall be vandal proof with stainless steel screws

2.06 UNIONS

A. Furnish and install one union at each threaded or soldered connection to equipment and 2 unions, one on each side of valves on pipes ½" to 3".

B. Locate unions so that piping can be easily disconnected for removal of equipment or valve. Provide type specified in following schedule:

<u>Type of Pipe Union</u>

Steel Pipe:	150 lb. Screwed malleable ground joint, brass, brass-to-iron seat, black or galvanized to match pipe.
Copper tubing:	Brass ground joint with sweat connections.

PVC Sch 80 pipe: PVC union, FIPT X FIPT

2.07 VALVES

A. Provide valves as shown and other valves necessary to segregate branches or units. Furnish valves suitable for service intended. Valves shall be properly packed and lubricated. Valves shall be non-rising stem. Place unions adjacent to each threaded or sweat fitting valve. Install valves with bonnets vertical. All valves shall be lead free.

B. Valves ½" thru 2"; shall be made of bronze, full size of pipe and lead free. Nibco S-113-FL Series; American G-300 Series; Matco 511 FL Series; Apollo 102T-FL Series. Brass valves of brass parts within valves will not be accepted.

C. Valves, 2 ½" thru 3" shall be class 150; Shall be made of bronze, full size of pipe; Jenkins Fig. 2310 J; Lunkinheimer Fig. 2153; Crane Fig. 437; Stockham Fig. B-128.

D. Valves, Flanged; 4" thru 12" Ductile Iron Resilient Wedge Gate Valve; Nibco F 609 RW; American 2500 Series; Kennedy 8561; Mueller 2360 Series.

2.07 FIRE HYDRANTS

A. Clow 960 (EDIT NOTE: VERIFY HYDRANT TYPE WITH LOCAL JURISDICTION) Factory Painted or per Local Jurisdiction Requirements, or an approved equal, 36" minimum bury, two 2-1/2" hose nozzles, one 4-1/2" pumper nozzle, and break-off check valve, Clow LBI 400A or approved equal . Hydrant shall conform to, and installation shall comply with the Local Jurisdiction.

2.08 POST INDICATOR

A. Post Indicator shall be Mueller Co. A-20806 (adjustable) with tamper switch or an approved equal.

2.09 BACKFLOW PREVENTERS
Double Check Valve, Double Check Detector and Reduced Pressure Backflow Preventers

A. Backflow preventers shall be as approved by the local agency and by the State of California's Department of Health Services most recent list of approved reduced pressure backflow preventers. All approved backflow preventers shall have ductile iron bodies.

1. Provide Backflow preventer blankets with locking device. Weatherguard R-30 insulated or equal.
2. Provide ball valve at all test ports with brass plug in valve.
3. Provide a minimum of 2 valve tamper switches on fire prevention Backflows.

2.10 TAPPING SLEEVE

A. Shall be used on pipe sizes 6" thru 12" and shall be made with stainless steel material including stainless steel bolts. Flanges shall be ductile iron or high carbon steel. Gaskets shall seal full circumference of pipe. Shall be manufactured for operating pressure of 200 psi, and shall pass test pressure of 300 psi. Romac SST series; Smithblair 662; Mueller H304; Ford "FAST" tapping sleeve.

2.11 SERVICE SADDLES

A. Shall be used on pipe size 2” thru 4”. Body shall be made from ductile iron with epoxy coating or bronze. Cascade Style CSC-1; A.Y. McDonald model 3891 AWWA/3892 FNPT; Smith-Blair #317; Ford S70, S71, S90, (style B).

2.11 TRACER WIRE

A. No. 10 THW solid copper wire. Solder all joints

PART 3 - EXECUTION

3.01 DRAWINGS AND COORDINATION

A. General arrangement and location of piping, etc., are shown on Drawings or herein specified. Install work in accord therewith, except for minor changes that may be necessary on account of other work or existing conditions. Before excavation, carefully examine other work that may conflict with this work. Install this work in harmony with other craft and at proper time to avoid delay of work.

B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.

C. In advance of construction, work out minor changes if conflicts occur with electrical or mechanical. Relocate services to suit actual conditions and work of other trades to avoid conflict therewith. Any adjustments or additional fittings to make adjustments shall not be cause for additional costs to the owner.

D. Execute any work or apparatus shown on drawings and not mentioned in specifications, or vice versa. Omission from Drawings or Specifications of any minor details of construction, installation, materials, or essential specialties does not relieve Contractor of furnishing same in place complete.

E. Graded pipes shall take precedence. If conflict should occur while placing the domestic water and fire service piping, the contractor shall provide any and all fittings necessary to route the water lines over or under such conflicting pipes at no additional costs to the owner.

3.02 ACCESS

A. Continuously check for clearance and accessibility of equipment or materials specified herein to be placed. No allowance of any kind shall be made for negligence on part of Contractor to foresee means of installing his equipment or materials into proper position.

3.03 EXCAVATING AND BACKFILLING

A. Excavation and Bedding:

1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities

or rock points. Trench width to be a minimum of 12" wider than outside diameter of pipe. Follow manufacturer's recommendations for use of each kind and type of pipe.

2. Bedding: Provide a bedding as noted on drawing details for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
3. If the trenches for the site utilities falls within areas to be lime treated, the piping shall be installed prior to any lime treatment operations, providing the elevation of the piping is below the treatment section.
   a. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base, with minimum section equal to the lime treated section and compacted to 95%.

B. Laying of Pipe:

1. General: Inspect pipe prior to placing. Sun damaged pipe will be rejected. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe bell upgrade, true to line and grade.
   a. Sewer pipe shall be laid in strict conformity to the prescribed line and grade, with grade bars set and each pipe length checked to the grade line. Three consecutive points on the same rate of slope shall be used at all times to detect any variation from a straight grade. In any case of discrepancy, work shall be stopped and the discrepancy immediately reported to the Owner’s Representatives. In addition, when requested by the Owner's Representative, a string line shall be used in the bottom of the trench to insure a straight alignment of the sewer pipe between manholes. The maximum deviation from grade shall not be in excess of 1/4 inch. In returning the pipe to grade, no more than ¼” depression shall result.
   b. The Contractor shall expose the end of existing pipe to be extended, for verification of alignment and elevation, prior to trenching for any pipe which may be affected. All costs of such excavation and backfill shall be included in the price paid for the various items of work.
   c. A temporary plug, mechanical type shall be installed on sewer pipe at the point of connection to existing facilities. If connecting to a public facility the plug shall conform to the requirements of the local jurisdiction. This plug shall remain in place until the completion of the balling and flushing operation.

   EDIT NOTE: USE IF SEWER IS PLACED ABOVE GRADE

   d. Any portions of the new sewer above ground shall be made using no-hub cast iron soil pipe, using no-hub fittings and couplings. The transition from PVC to cast iron shall be made below grade.
   e. Above ground sewer piping shall be supported using unistrut and the appropriate pipe strap. Unistrut shall be fastened to the building structures wood frame. Unitstrut shall be fastened to the structure using 2- 3/8” X3” lag bolts. Spacing shall be per plumbing code for pipe type and size.
   f. In cases where above ground sewer cannot be fastened to a structure, the contractor shall use “Doublestrut” unistrut for a pedestal type pipe hanger. The pedestal shall be placed into a pier footing 9” diameter, 18” deep.
   g. Pedestals shall be spaced no greater than the required pipe hanger spacing schedule for pipe type and size in the CPC Plumbing Code
2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.

C. Backfilling:

1. General: Do not start backfill operations until required testing has been accomplished.
2. Compaction and Grading: Remainder of backfill shall be in accordance with Section 31 23 33 – TRENCHING AND BACKFILLING.
3. If trenching in area previously lime or cement treated backfill top of trench section, same depth as lime or cement treatment with Class 2 Aggregate Base compacted to 95% minimum relative compaction.

3.04 INSTALLATION OF WATER PIPING

A. The contractor shall be responsible for determining the installed depth of all water piping, based on surfaces grades and minimum required depth of cover.

B. Immediately cap or plug ends of, and opening in, pipe and fittings to exclude dirt until final connections made. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used.

C. General: Should existing conditions or other work prevent the running of pipes or the setting of equipment at the points indicated by drawings, changes as authorized by the Architect shall be made without additional cost to the Owner.

D. All bolts used on mechanical fittings shall be thoroughly coated with an asphaltic bituminous coating conforming to 2016 NFPA 24, 10.4.1.1.

E. All buried metal shall be incased with 8 mil polyethylene wrap so that no soil is in contact with metal. Ends of polyethylene wrap shall be taped to provide seal with pipe.

F. Do not install water lines in same trench with non-metallic sewer lines unless bottom of water pipe at all points is at least 12" above top of sewer line and water line is placed on solid shelf excavated at one side of common trench with a minimum of 12 inch horizontal separation.

G. Under no circumstance shall a fitting be located directly under a structural footing without prior approval from the Architect.

H. In locations where existing domestic pipe is rerouted, the new pipe shall be assembled using restrained fittings at all joints including factory pipe joints. Tapped restrained blind flanges shall be temporarily installed at each end of the assembled pipes until testing and chlorination is completed and approved.

3.05 CLOSING IN OF UNINSPECTED WORK

A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected, tested, and approved. Should work be enclosed or covered up before it has been approved, uncover work at own expense. After it has been inspected, tested and approved, make repairs necessary to restore work of other contractors to condition in which it was found at time of cutting.

3.06 CARE AND CLEANING

A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in new condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures and trim that are installed as part of this work. Leave systems and equipment in satisfactory new operating condition.

B. Drain and flush piping to remove grease and foreign matter.

C. Sewer piping shall be balled and flushed.

D. Clean out and remove surplus materials and debris resulting from the work, including surplus excavated material.

E. Flush fire service piping in the presence of the project inspector. Flushing shall be continued for a sufficient time as necessary to ensure all foreign material has been removed. Flow rate shall be equal to site fire flow requirements.

3.07 SEWER INTERNAL INSPECTIONS

A. Upon completion of construction and prior to final inspection, the Contractor shall clean the entire new pipeline of all dirt and debris. Any dirt or debris in previously existing pipes or ditches in the area, which resulted from the new installation, shall also be removed. Pipes shall be cleaned by the controlled balling and flushing method. Temporary plugs shall be installed and maintained during cleaning operations at points of connection to existing facilities to prevent water, dirt, and debris from entering the existing facility.

B. Provide video inspection for all site sewer piping. If debris is found in line, contractor shall remove debris by necessary means and pipe shall be camera'd again to confirm the debris has been removed. Camera'ing shall be digitally recorded and provided to the District on a DVD or flash drive. Camera device shall be capable of directly recording information. Secondary devices shall not be accepted. Audio voice shall be recorded during each inspection by the operating technician and shall include sewer location, identification start and end points or cleanouts. Measurement for location of defects and actual length of pipe shall be by means of a calibrated meter on the camera with a digital readout on the video monitor. In order to measure any sags or bellies in pipe, camera shall be equipped with a measuring device capable of accurately measuring the depth of standing water up to 3 inches.

C.

3.08 TEST OF PIPING

A. Pressure Test piping at completion of roughing-in, in accord with following schedule, and show no loss in pressure or visible leaks after minimum duration or four (4) hours at test pressures indicated.

B. Chlorination tests shall be performed after all fixtures and any required mechanical devices are installed and the entire system is complete and closed up.

C. In cases where new domestic water piping is assembled for re-routing of existing domestic water pipe , the contractor shall perform the following testing prior to connecting the new water pipe to the

existing system.

1. The pipe shall be pressure tested and per the test schedule.
2. The pipe shall be pressure tested down within the trench.
3. The contractor shall dig a temporary ditch below the existing pipe to drain to a sump that is lower than the bottom of the trench and to the side of the trench. The sump shall be 30% larger than the total volume of water within the testing pipe assembly.
4. After pressure testing and chlorination has taken place and accepted, the contractor shall drain the pipe into the sump and pump the sump out as it is filling.
5. The temporary test fittings at each end of the pipe assembly shall be removed and the final restrained couplings installed.
6. The existing piping shall be cut and the water within the pipe shall drain below the pipe to the temporary sump. Pump the sump as it is being filled up. Take extreme caution not to contaminate the existing pipe with any contaminates within the trench.
7. Before making the final coupling connections, the restrained couplings at each end of the new pipe shall be thoroughly swabbed inside the fitting with a solution of chlorine mixed with water at a rate of 1part chlorine to 4 parts potable water.
8. After final connections are made, a visual inspection shall be made after fittings are wiped off. If after 1 hr, no noticeable drips are noted the pipe can be backfilled.
9. The contractor shall flush all water piping affected by chlorination until it is within acceptable levels approved by certified testing lab.

TEST SCHEDULE

System Tested	Test Pressure PSIG Test With
Public water mains	Per local jurisdiction requirements.
Private domestic water piping and fire mains serving fire hydrants:	150 Lbs. Water 4 hrs.
Fire Protection Piping from PIV to fire riser:	200 Lbs. Water pressure, 4 hrs duration with no pressure loss.
Sanitary Sewer Piping:	Sewer system shall be tested for leakage per local jurisdiction requirements.

D. Testing equipment, materials, and labor shall be furnished by contractor.

3.09 WATER SYSTEM STERILIZATION

A. Public Water Mains: Shall be flushed and disinfected per the local jurisdiction requirements

B. Clean and disinfect all site water systems connected to the domestic water systems in accordance with AWWA Standard C651 and as required by the local Building and Health Department Codes, and EPA.

1. Clean and disinfect industrial water system in addition to the domestic water system.
2. Disinfect existing piping systems as required to provide continuous disinfection upstream to existing valves. At Contractors option, valves may be provided to isolate the existing piping system from the new piping system.

C. Domestic water sterilization shall be performed by a licensed "qualified applicator" as required by CAL-EPA Pesticide Enforcement Branch for disinfecting and sterilizing drinking water.

D. Disinfecting Agent: Chlorine product that is a registered product with Cal-EPA for use in California potable water lines, such as Bacticide, CAL-EPA Registration No. 37982-20001.

E. Contractor to provide a 1" service valve connected to the system at a point within 2'-0" of its junction with the water supply line. After sterilization is complete Contractor to provide cap at valve.

F. Sterilization Procedure to be as follows:

1. Flush pipe system by opening all outlets and letting water flow through the system until clear water flows from all outlets.
2. Inject disinfecting agent to provide a minimum chlorine residual concentration of at least 50 parts per million (ppm) of free chlorine at each outlet.
3. Provide sign at all outlets which reads "Water Sterilization in Progress – Do not operate". Remove signs at conclusion of test.
4. Close all outlets and valves, including valve connecting to water supply line and 1" service valve. Retain treated water in pipe for a minimum of twenty-four hours. Should chlorine residual at pipe extremities be less than 50 PPM at this time, pipe shall be re-chlorinated. As an option, the water systems may be filled with a water-chlorine solution containing a minimum of 200 PPM of chlorine and allowed to stand for three hours.
5. After chlorination, flush lines of chlorinated water and refill from domestic supply. Continue flushing until residual chlorine is less than or equal to 0.2 ppm, or a residual the same as that of the test water.

G. Chemical and bacteriological tests shall be conducted by a state-certified laboratory and approved by the local authorities having jurisdiction.
H. Submit written report to Health Department as required by State Regulations. Provide a copy of report to Architect prior to completion of project.
I. The costs of sterilization and laboratory testing shall be paid for by the contractor.

3.10 CLEANING

A. Refer to Section 01 74 00.

B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

END OF SECTION

SECTION 33 40 00

SITE DRAINAGE

PART 1 - GENERAL

1.01 SUMMARY

A. SECTION INCLUDES:
1. Storm Drain piping, fittings, structures.

B. RELATED SECTIONS

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 01 50 00, Construction Facilities and Temporary Controls.
3. Section 31 23 33, Trenching and Backfilling.
4. Section 32 16 00, Site Concrete.
5. Section 33 00 00, Earthwork.
6. Section 31 31 00, Soil Treatment

1.02 REFERENCES AND STANDARDS

A. ANSI/ASTM D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.

B. ANSI/ASTM D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.

C. ANSI/ASTM D1557-02 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.

D. ANSI/ASTM D3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).

E. ANSI/ASTM D4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

F. CALTRANS Standard Specifications.

G. CAL-OSHA, Title 8, Section 1590 (e).

H. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

I. NFPA 13, 24 and 25, latest editions.

J. California State Health and Safety Code Section 116875, Lead Free Public Water Systems.

K. California Plumbing Code, latest edition.

1.03 SUBMITTALS

A. Refer to Section 01 33 00.

B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

C. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.

D. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

1.04 QUALITY ASSURANCE

A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the drawings to be salvaged and re-used.

1. Sun damaged or discolored PVC pipe will be rejected.

B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

C. The representatives of the Owner’s testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner’s testing lab representatives nor the testing by the Owner’s testing lab shall excuse the contractors or subcontractors for defects or deficiencies discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

D. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction or incorrect grades will be the responsibility of the contractor.

E. Per 2016 NFPA 13 provide Contractor's material and test certificate to the Owner, Architect, Project Inspector and Local Fire Authority.

1.05 FEES, PERMITS, AND UTILITY SERVICES

A. Obtain and pay for permits and service charges required for installation of Work. Arrange for required inspections and secure written approvals from authorities having jurisdiction.

B. Upon completion of work within right-of-way, provide copies of written final approval to the Architect.

1.06 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.07 PROJECT CONDITIONS

A. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

B. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.08 WARRANTY

A. Refer to General Conditions and Section 01 78 36.

1.09 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

1.10 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

1.11 RECORD DRAWINGS

A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.

B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.

C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.

D. Properly identify on as-builts and provide dimensions for all stubs for future connections. Provide concrete markers 6” dia. 12” deep, flush with finish grade at the ends of all stubbed pipes.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipe: Use one of the following, unless noted on the Drawings otherwise.

1. Polyvinyl Chloride Pipe (PVC): SDR35 conforming to ASTM D3034 with elastomeric joints conforming to ASTM D3212. Sun damaged pipe will be rejected.
2. High density polyethylene pipe (HDPE): The pipe shall be corrugated exterior/smooth interior pipe and water tight per ASTM D3212 with dual wall water tight gasket fittings.

B. Perforated Pipe (for subdrains): Shall be ADS N12 pipe, 3 hole, ASTM F405, AASHTO M 252; PVC ASTM D3034 SDR-35 storm drain pipe

C. Manhole: Shall be as shown on the drawing details.

D. Drop Inlet: Shall be as shown on the drawing details.

E. Curb Inlet: Shall be as shown on the drawing details.

F. Mortar: For pipe connections to concrete drainage structures, conform to ASTM C270 type N mortar. Place within one half hour after adding water.

G. Crushed Rock: Imported washed crushed rock. Minimum 100% passing 3/4 inch sieve.

H. Trench drain: Polycast, Polydrain or equal and as shown on drawings.

I. Area Drains: Shall be as shown on the drawing details.

J. Floor Drains: Shall be as shown on the drawing details.

K. Clean-outs: Shall be as shown on the drawing details.

L. Planter drains: Shall be as detailed on the drawing details.

M. Filter Fabric: Mirafi 140N.

PART 3 - EXECUTION

3.01 INSPECTION LAYOUT AND PREPARATION

A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point were this installation may properly commence

B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.

C. Verify that specified items may be installed in accordance with the approved design.

D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 INSTALLATION

A. General: Installation shall be in strict conformance with referenced standards, the manufacturer's written directions, as shown on the drawings and as herein specified.

B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.

C. Excavation and Bedding:

1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width in accordance with pipe manufacturer's recommendations and as per the drawings. Follow manufacturer's recommendations for use of each kind and type of pipe.

2. Bedding: Provide bedding as detailed on plans for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
3. If the trenches for the site drainage fall within areas to be lime treated, the piping shall be installed prior to any lime treatment operations.
   a. If additional piping is added to previously lime treated areas, the contractor shall backfill the trench with class 2 aggregate base and compact to 95%.

D. Laying of Pipe:

1. General: Inspect pipe prior to placing. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe upgrade, true to line and grade.
2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution or as recommended by manufacture. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.
3. Pipe shall be bedded uniformly throughout its length.
4. Pipe elevation shall be within 0.02 feet of design elevation as shown on plans.
5. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the governing agency.

E. Backfilling:

1. General: Do not start backfill operations until required testing has been accomplished.
2. Trenches and Excavations: Backfill with material as detailed on plans, filling both sides of the pipe at the same time, carefully tamping to hold pipe in place without movement. Refer to Section 31 23 33 – TRENCHING AND BACKFILLING for fill above this layer.

F. Grouting of Pipes: Grout pipes smooth and water tight at drop inlet, manholes, and curb inlets. Grout back side of hood at curb inlets all grouting shall be smooth and consistent.

G. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the local agency.

H. Cutting and Patching: Remove and replace existing surface features per applicable specification section (i.e. asphaltic concrete or concrete paving) where pipe is installed in areas of existing improvements.

3.03 TOLERANCES

A. Storm Drain structure grates

1. In landscape and lawn areas +- 0.05’.
2. In sidewalk and asphalt pavement +-0.025’.
3. In curb and gutter application +-0.0125’.

B. Cleanout Boxes and Lids

1. In landscape areas; 0.10 higher than surrounding finish grade, +-0.05'.
2. In sidewalks and asphalt pavement; Flush with surrounding finish grade, +-0.025'.

3.03 DEWATERING

A. Contractor to provide trench dewatering as necessary, no matter what the source is, at no additional cost to the owner.

B. If the previously excavated material from trenching is too wet to achieve trench backfill compaction the contractor shall make a reasonable effort to aerate and dry the material per section 31 00 00, 3.08, B

3.04 FLUSHING AND INTERNAL INSPECTIONS

A. The Contractor shall thoroughly ball and flush the storm drain system to remove all dirt and debris. Discharge water to an approved location.

B. Provide video inspection for all site storm drain piping. If debris is found in line, contractor shall remove debris by necessary means and pipe shall be camera'd again to confirm the debris has been removed. Camera'ing shall be digitally recorded and provided to the District on a DVD or flash drive. Camera device shall be capable of directly recording information. Secondary devices shall not be accepted. Audio voice shall be recorded during each inspection by the operating technician and shall include storm drain location, identification start and end points or cleanouts. Measurement for location of defects and actual length of pipe shall be by means of a calibrated meter on the camera with a digital readout on the video monitor. In order to measure any sags or bellies in pipe, camera shall be equipped with a measuring device capable of accurately measuring the depth of standing water up to 3 inches.

3.05 CLEANING

A. Refer to Section 01 74 00.

B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

C. Clean the dirt, rocks, and debris from all storm drain inlets, structures, and connecting pipes.

END OF SECTION