

**District Warehouse IT Office
Addition**

1305 E. Vine Street, Lodi, CA 95240

3431006

Lodi Unified School District

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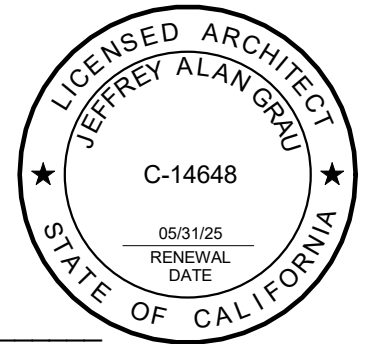


June 21, 2024

HMC Architects

**DISTRICT WAREHOUSE IT OFFICE ADDITION
LODI UNIFIED SCHOOL DISTRICT**

June 21, 2024
HMC # 3431006




HMC ARCHITECTS
Architect

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Work included.
 - 2. Work by others.
 - 3. Dimensional tolerances for accessibility.
 - 4. Contractor's use of premises.
 - 5. Work sequence.
 - 6. Extended liquidated damages.
 - 7. Owner occupancy.
 - 8. Existing utilities.
 - 9. Asbestos.

1.2 WORK INCLUDED

- A. Under a single contract, construct the Warehouse IT Office for Lodi Unified School District located in Lodi, CA. Work includes:
 - 1. Construction of an office inside the district warehouse;
 - 2. Installation of related systems, including mechanical, electrical, low voltage, and fire sprinklers;
 - 3. Other work as shown in the documents and as required for a complete an operational project.

1.3 WORK BY OTHERS

- A. Work on the Project which will be executed prior to start of Work of this Contract, and which is excluded from this Contract, is as follows:
 - 1. Owner will remove furniture, supplies, drapes and salvageable items. Owner will not remove finishes or expose structure in support of Contractor's work.
- B. Work in the Project which will be executed after completion of Work of this Contract, and which is excluded from this Contract, as follows:
 - 1. None
- C. Work on this Project which will be executed during the Work of this Contract which the Contractor shall coordinate with and facilitate:
 - 1. None

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1.4 DIMENSIONAL TOLERANCES FOR ACCESSIBILITY

- A. While it is recognized that construction practices generally permit a level of reasonable dimensional tolerance, the installation of any items subject to compliance with the Americans with Disabilities Act Accessibility Guidelines and Chapter 11B of the California Building Code (CBC), which are not shown with dimensional tolerances, on the drawings or in the CBC, shall be considered absolute. These dimensions will be strictly enforced. Items found to be out of tolerance may require modification and/or replacement at contractor's expense.

1.5 CONTRACTOR'S USE OF PREMISES

- A. Specific roads for access to and from building sites will be agreed on with the Owner. All traffic and materials delivery shall be confined to these roads.
- B. Specific areas for storage of materials and site fabrication will be agreed upon. Contractor's activities shall be confined to these areas.
- C. Work shall proceed in such manner as to not interfere with Owner's activities in and about nearby facilities. Exceptions will be made only after previous agreement between Owner, Architect and Contractor.
- D. Fire alarm, intercom, intrusion alarm and other such tests shall be coordinated with site personnel, if such tests occur after occupancy.

1.6 WORK SEQUENCE

- A. Schedule and construct work in stages to accommodate Owner's use of the premises before and after the primary construction period. Coordinate the construction schedule and operations with the Owner's representative. The three stages of the construction process following the bid award shall be:
 - 1. Pre-construction Stage: Pre-construction activities shall occur from the start date, to the first day of availability. Activities shall include, but are not limited to:
 - a. Project scheduling/subcontractor coordination
 - b. Identification of long lead materials and equipment
 - c. Temporary facilities and controls
 - d. Action submittals as specified, including:
 - 1) Shop drawing submittals
 - 2) Color and sample submittals
 - e. Deferred approval submittals
 - f. Material ordering (particularly long lead items)
 - g. Material stock piling
 - h. Field measuring
 - i. Activities to be performed by the Owner shall include:
 - 1) Removal of equipment and personal items from the buildings (although this may not fully occur by the first day).

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- j. The architect and engineers will expedite all long lead item submittals as quickly as possible. Such items must be indicated as "critical" when submitted. Substitutions of finishes, materials and equipment will not be permitted due to the lack of availability unless submittals are made early and completely.
- 2. Construction Stage: Primary construction activities shall occur from the date of availability, through the Date of Substantial Completion. Activities shall include work as described by the construction documents.
 - a. It is the intention of the owner to make these buildings available on the dates indicated below. Certain units also may be available earlier than the dates shown.
 - b. Due to the nature of the work and the type of facilities, the schedule is fixed and cannot be altered. The premises will not be available prior to date of availability. All primary work must be completed prior to Date of Substantial Completion. Critical work, includes life safety, HVAC, plumbing, electrical service, security and general construction. Temporary measures will be required if primary work is uncompleted at start of school date.
 - c. As the Owner needs time for preparing classrooms for the new school session, the Contractor shall turn over spaces in an orderly sequence to allow occupancy and use of the spaces over the final 2 weeks of the construction period. This schedule must be prepared with the Owner's input.
- 3. Completion/Close-out Stage: Completion and close-out activities shall occur from Date of Substantial Completion to Final Completion. Activities shall include:
 - a. Completion of minor finish work. Minor work shall be considered completion or installation of items which will not interfere or hinder the Owner from utilizing the facility, such as touch-up painting, hardware adjustment, etc.
 - b. Punch list work.
 - c. Project close-out.
 - d. All work performed during this period must occur outside of normal school hours. Arrangements must be made with the owner representative and work schedules approved.

B. Delays:

- 1. Minor delays: Minor delays caused by parties other than the Contractor, such as the Owner, or Architect, or Abatement Contractor, will not be considered critical path delays and will not result in a time extension to the project schedule. Minor delays shall be defined as delays due to the need for review, clarifications, consideration, detailing, etc. which typically do not last more than 48 hours, are addressed promptly and solved without significant changes to the work, as determined solely by the Architect. Such items which may cause delay must be identified by the Contractor at the time of origin.
- 2. Other delays: Other delays caused by unknown or unforeseen conditions or significant changes or modifications requested by or required by the Owner, Architect or local jurisdiction, will be permitted only if promptly submitted, reviewed and approved by the Architect and Owner. Such delays may result in time extensions to specific work or areas of work only, and not to other unaffected portions of the project. Such delays must directly affect the critical path of the

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work, be shown as unavoidable and be unable to be made up through rescheduling.

- C. Occupancy: The project will be occupied by the District Staff as shown below. Dates are fixed and cannot be changed. The premises will be occupied whether or not the work is completed regardless of time extensions (if any). Any work performed after this date will need to be fully coordinated with the Owner and will be limited to after school hours or weekends.

D. Project Schedule:

1. The following schedule summarizes the major activity dates (Dates are approximate and actual start dates are subject to change):

a.	Bid	Dates
	1) Advertise to Bid (first)	TBD
	2) Advertise to Bid (second)	TBD
	3) Pre-Bid Conference	TBD
	4) Addendum (last)	TBD
	5) Bids Due	TBD
	6) Board Award	TBD
b.	Contracts	
	1) Bond Preparation	TBD
	2) Contract Execution	TBD
c.	Pre-Construction Activities	
	1) Start Date	TBD
	2) Submittals and Approvals	TBD
	3) Materials Ordering/Stockpiling	TBD
d.	Construction	
	1) Date of facility availability	TBD
	2) Construction	TBD
e.	Occupancy: In order to accommodate a phased occupancy by the Owner, the Contractor will turn the buildings over for occupancy as follows:	
	1) Occupancy	TBD
f.	Completion/Close-out	
	1) Substantial Completion Date	TBD
	2) Complete Punch List Work	TBD
	3) Final Completion	TBD
	4) Closeout	TBD

1.7 EXTENDED LIQUIDATED DAMAGES

- A. At the conclusion of the Punch List Work Completion date, all items are to be 100% finalized. Should work remain uncompleted beyond this date, the Owner may re-instate liquidated damages until all such work has been accepted. In addition, work

uncompleted may, at the Owner's option, be completed by others and charged against the contract amount.

1.8 OWNER OCCUPANCY

- A. Owner will occupy nearby premises during construction.
- B. Refer to General Conditions for requirements for partial occupancy by Owner.
- C. Owner will not occupy buildings included in this scope of work during the primary construction period. However, occupancy will occur as shown above.
- D. Owner may occupy other buildings on premises during construction and may be present on site during summer construction period.

1.9 EXISTING UTILITIES

- A. It is recognized by the District and the Contractor that the location of existing utility facilities as shown on contract drawings and specifications are approximate; their exact location is unknown.
- B. Recognition is given to the fact there may be additional utilities existing on the property unknown to either party to the Contract. Location of utilities as shown on drawings and specifications represent the best information obtainable from utility maps and other information furnished by the various agencies involved. The Owner warrants neither the accuracy nor the extent of actual installations as shown on the drawings and specifications.
- C. Because of this uncertainty, it may become necessary for the Architect to make adjustments in the line or grade of sewers or storm drains. Installation of such adjusted lines shall be made at the regular unit price bid for the work, and no additional compensation will be paid therefore, unless the scope and character of the work has been changed.
- D. The Contractor agrees and is required to coordinate and fully cooperate with the Owner and utility owners for the location, relocation, and protection of utilities. The Contractor's attention is directed to the existence of utilities, underground and overhead, necessary for all buildings within the area of work. Prior to start of trenching operations, the Contractor shall meet with Owner Representative(s) to fully review known utility locations which may affect the work.
- E. In accordance with Section 4215 of the Government Code of the State of California, the Owner shall make provisions to compensate the Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such main and trunk line utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work. Compensation will be in accordance with the provisions of these specifications providing for change orders. Nor shall the Contractor be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the Owner or owner of the utility to provide for removal or relocation of such utility facilities.

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- F. Nothing herein shall be deemed to require compensation to the Contractor or to relieve him from being assessed liquidated damages for such delay when the presence of unidentifiable utilities can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of construction, and the damage to existing utilities or delay was caused in whole or in part by a failure of the Owner to indicate the presence of such service laterals or appurtenances.
- G. In the event the Contractor discovers utilities not identified in the Contract plans or specifications, the Contractor shall immediately notify the Architect and the utility owner by the most expeditious means available and later confirm in writing.
- H. Existing building utilities shall not be interrupted during normal operating hours.

1.10 HAZARDOUS MATERIALS

- A. Prior to start of work, the Contractor shall obtain and review the Owner's hazardous materials report on any existing facilities to become familiar with existing conditions.
- B. If hazardous materials identified in the report are not fully addressed in the contract documents, the contractor shall bring this to the attention of the Architect prior to start of construction for clarification.
- C. Should hazardous materials outside of the scope of work be discovered during construction operations, the contractor shall immediately notify the Project Inspector and Architect and shall suspend work in the area until necessary identification, testing and abatement (if required) is completed.

END OF SECTION

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Last Updated: December 16, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pre-construction Meeting.
 - 2. Regular project meetings.
 - 3. Pre-installation meetings.

1.2 GENERAL

- A. The Architect shall make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to the Owner, Project Inspector, Contractor, participants, and others affected by the decisions made.
- B. Attendance required: Project Superintendent, Project Manager (if any), major Subcontractors (as requested), Architect, Project Inspector, and others as appropriate to the meeting topics.

1.3 PRE-CONSTRUCTION MEETING

- A. Upon issuing a notice of intent to award the contract, the Architect will schedule a pre-construction meeting.
- B. Agenda: Architect and Contractor shall prepare an agenda and distribute copies at least one week in advance of the Pre-Construction meeting.
- C. Architect's agenda may include, but not limited to, discussion of the following items:
 - 1. Project description and scope of work.
 - 2. Accepted alternates.
 - 3. Temporary facilities and use of the site.
 - 4. Environmental procedures.
 - 5. Legal and code requirements.
 - 6. Designation of personnel representing the parties to the contract; lines of communication.
 - 7. Communication and responsibilities.
 - 8. Submittal procedures in accordance with Section 01 3300.
 - 9. Construction schedule and critical path.
 - 10. Schedule of values.
 - 11. Record drawings.
 - 12. Progress payments.
 - 13. Change orders and time extensions (related to critical path).
 - 14. Inspection and testing.
 - 15. Project closeout.

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1.4 PROJECT MEETINGS

- A. The Architect will schedule and run project meetings at regular intervals throughout the project to review the short-term project schedule and to discuss issues requiring resolution. It is the duty of the Contractor to attend, participate in, and comply with the agreements reached and direction set at these meetings.

1.5 PRE-INSTALLATION MEETINGS

- A. The Contractor shall schedule and run pre-installation meetings in accordance with the product specifications.

1.6 SPECIAL MEETINGS

- A. The Architect may occasionally schedule special meetings for the purpose of discussing work requiring a significant coordination effort or for resolving issues which require more attention than they can be given in the regularly scheduled meetings. The Contractor shall attend these meetings along with representatives of subcontractors, suppliers, and/or manufacturers when appropriate for the subject matter to be discussed.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for the following:
 - a. Electronic Data Transfer.
 - b. Substitutions: Specific procedures for submission and approval of products other than those specified or noted on the Drawings.
 - c. Procedures for processing of Contractors "Requests for Interpretation" (RFI) questions.
2. Procedures to be followed in preparing and submitting the following:
 - a. Subcontractor List.
 - b. Progress Schedule.
 - c. Schedule of Values.
 - d. Shop Drawings.
 - e. Product Data/Material Lists.
 - f. Samples.
 - g. Requests for Information (RFI).
 - h. Deferred Approvals.
 - i. Record Drawings.
 - j. Certifications including those required for material VOC content.
 - k. Maintenance/Operating Manuals.
 - l. Warranties and Extended Guarantees.
 - m. Extra Stock.
3. Substitution Procedures: Specific requirements for submission and approval of products other than those specified or noted on the Drawings.
4. Procedures for processing of Contractors "Requests for Interpretation" (RFI) questions.
5. Electronic Data Transfer.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; "Accessory Material VOC Content Certification Form."
- B. Section 01 7700, Closeout Procedures.
- C. Section 01 7836, Warranties; guarantee/warranty forms.
- D. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.

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- E. Test reports: Pertinent Specification Sections (by testing lab).
- F. Individual requirements for submittals also are described in other Sections of these Specifications.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.
- B. Informational Submittals: Written and graphic information and physical samples indicated in individual Specification Sections as informational submittals that do not require Architect's responsive action.
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. General;
 - 1. Shop drawings, product data, and samples are in no case to be considered Contract Documents but are to be treated only as instruments of convenience and facility to further the progress of the Work.
 - 2. Miscellaneous systems not specifically specified but installed to meet code requirements or for other reasons are subject to Architect's review prior to installation.
- B. Shop drawings, product data, samples and supporting data shall be prepared by Contractor or its suppliers but shall be submitted to Architect by Contractor as the instruments of the Contractor.
- C. Coordination of Submittals:
 - 1. Before submitting a shop drawing or any related material to Architect, Contractor shall: review each such submission for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, which are the sole responsibility of the Contractor; approve each such submission before submitting it; and so stamp each such submission before submitting it. By affixing the Contractor's signature to each submittal, the Contractor certifies that this coordination has been performed.
 - 2. Architect shall assume that no shop drawing or related submittal comprises a variation unless the Contractor advises the Architect otherwise via a written instrument which is acknowledged by the Architect in writing.
- D. Grouping of Submittals:

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1. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
 2. Partial submittals may be rejected as not complying with the provisions of the Contract. The Contractor may be held liable for delays so occasioned.
- E. Architect will check submittals for conformance with design concepts of project. Approval by Architect covers only such conformance. Effort will be made by Architect to discover any errors, but responsibility for accuracy and correctness of submittals shall be with the Contractor.
- F. Approval of submittals will be on a general basis only and shall not relieve the Contractor from their responsibility for proper fitting and construction of the Work, nor from furnishing materials and labor required by the Contract which may not be indicated on the submittals when approved.
- G. No portion of the work requiring submittals shall be commenced until the submittal for that portion of the work has been approved by Architect. All such portions of work shall be in accordance with the approved submittals. Any work performed without approved submittals will be done so at the Contractor's own risk. Work found not to be in compliance with the approved submittals shall be removed and corrected at the Contractor's own expense.
- H. The Contractor shall make corrections required by Architect and shall resubmit as required by Architect the required number of corrected copies of shop drawings, product data, or new samples until approved. Contractor shall direct specific attention in writing or on resubmittals to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than two (2) re-reviews of required submittals of shop drawings, product data, or samples are subject to charge to the Contractor.

1.5 ELECTRONIC DATA TRANSFER

- A. Requests for Electronic Data will be considered upon receipt of written request by the Contractor accompanied by a signed copy of the Electronic Data Request Form (included with this section). Request should clearly outline specific Drawings desired and the intent of the request.
1. Submit Electronic Data Request Form on standard form.
 2. Allow 72 hours minimum for review and consideration by Architect.
- B. Electronic data files are not a part of the contract documents, but rather a convenience for the Contractor in preparation of his required submittals and layout efforts. Electronic files do not alter the content or meaning of the hard copy documents which may be a part of the Contract Documents.
- C. The electronic data files will remain the property of the Architect, shall not be used for any other purpose than that purpose stated in the Electronic Data Request Form, and shall not be released by the Contractor or any subcontractor to any other party without written consent from the Architect.

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- D. The electronic data files are distributed for reference only. Transferring such files can alter, delete or change original information. Accuracy of the data cannot be guaranteed as correct or complete and the Contractor accepts full responsibility for inaccuracies, regardless of cause.
- E. The hard copy documents, including addenda and subsequent written changes to the documents, represent the complete work of the Contract. Electronic files should be cross-referenced to the Contract Documents by the user and verified from that the information included contains the necessary Contract information. It is the Contractor's responsibility to make any changes or revisions to the electronic data files as necessary.
- F. Architect may, at his complete discretion and without explanation, approve or deny requests for electronic data.

1.6 SUBSTITUTIONS

- A. Architect's Approval Required:
 - 1. Contract is based on materials, equipment and methods described in Contract Documents. Substitutions will not be reviewed and approved prior to the award of the contract.
 - 2. Architect will consider proposals during the submittal process for substitution of materials, equipment and methods only when such proposals are accompanied by full and complete technical data and other information required by Architect to evaluate proposed substitution. Substitution shall be submitted with completed Substitution Request Form, included with this section.
 - 3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this work by Architect.
- B. "Or Equal": Whenever, in Contract Documents, any material, process or specified patent or proprietary name and/or by name of manufacturer is indicated, such name shall be deemed to be used for purpose of facilitating description of material and/or process desired, and shall be deemed to be followed by the words "or equal" and Contractor may offer any material or process which shall be equal in every respect to that so indicated or specified; provided, however, that if material, process or article offered by Contractor is not, in opinion of Architect, equal in every respect to that specified, then Contractor shall furnish material, process or article specified or one that in opinion of Architect is equal thereof in every respect.
- C. "No Substitutions": Items indicated as "No Substitutions" shall be provided as specified and no alternates will be allowed. These items are required either due to standards implemented by the Owner or to match materials recently installed by others.
- D. Coordination: Approval of substitution shall not relieve Contractor from responsibility for compliance with requirements of Drawings and Project Manual, and Contractor shall be responsible at his own expense for any changes in other parts of its own work or work of others which may be caused by approved substitution.
- E. DSA Approval: Substitutions of certain items may cause such items to require a Deferred Approval by DSA. Should a DSA Deferred Approval be required, the Contractor shall provide information and documents necessary to complete the Deferred Approval

process without any additional costs to the Owner, including engineering, calculation and modification of substitute products.

PART 2 - SUBMITTALS

2.1 SUBCONTRACTOR LIST

- A. Provide a typed list of Subcontractors within 5 days of notice of the award of contract. Include Subcontractor name, address, phone number, license number and trade.

2.2 PROGRESS SCHEDULE

- A. Prepare and submit estimated progress schedule for work within 10 calendar days after issuance of Notice to Proceed. Submit up-dated schedules:
 - 1. At mid-point of construction.
 - 2. When time extensions of more than two weeks are necessary.
- B. Relate progress Schedule to entire Project. Indicate following:
 - 1. Dates for starting and completion of various sub-contracts.
 - 2. Dates for submission of required submittals.

2.3 SCHEDULE OF VALUES

- A. Before first Application for Payment, submit for Architect's approval a Schedule of Values of various portions of work, aggregating total Contract sum, divided so as to facilitate payment to subcontractors, prepared in such form as Architect and Contractor may agree upon, and supported by such data to substantiate its correctness as Architect may require.
 - 1. Breakdown shall include separation of sitework from building work for main categories including electrical, plumbing, concrete, etc. Separations shall also be provided for each building of a multiple building contract. Include proper share of overhead and profit with each item in Schedule of Values.
 - 2. This Schedule, when approved by Architect, shall be used as basis for Contractor's applications for payment. Payment will not be released until a Schedule of Values is accepted.
- B. Schedule of Values shall appear similar to the following list and generally following the Table of Contents of this Project Manual as the format for listing component items. It shall be detailed at least as shown and portions shall not be more largely grouped so as to reduce its length unless appropriate to the scope of the Work. Mobilization/Start-up is limited to 2 percent on contracts greater than \$1,000,000 and 4 percent on contracts less than \$1,000,000. Contract closeout to be a minimum of 2 percent.
 - 1. Mobilization/Start-up.
 - 2. Temporary Facilities.
 - 3. Structural Steel/Metals.

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4. Lumber.
5. Rough Hardware.
6. Millwork/Trim.
7. Insulation.
8. Caulking and Sealants.
9. Hollow Metal Doors and Frames.
10. Finish Hardware.
11. Glass and Glazing.
12. Gypsum Board.
13. Acoustical Ceilings.
14. Painting and Wall Coverings.
15. Markerboards/Tack Boards.
16. Signage.
17. Fire Extinguishers and Cabinets.
18. HVAC/Sheet Metal.
19. Electrical – Building.
20. Site Concrete.
21. Electrical – Site.
22. Labor/Supervision.
23. Cleanup.
24. Contract Closeout.

2.4 SUBMITTAL SCHEDULE

- A. Contractor shall prepare and submit to Architect a "Submittal Schedule" when required by the General Conditions showing scheduled dates of submittals and date required for return of submittals to Contractor.
- B. Contractor shall provide in Schedule the minimum specified working days for Architect to review and check submittals provided it is not a deferred approval item. Based on the number and complexity of submittals at any one time, Architect's review period may be longer than the days specified.
- C. Dates on "Submittal Schedule" shall be agreed upon by both Architect and Contractor.

2.5 PROJECT DIRECTORY

- A. After execution of the Contract but prior to commencement of Work, Contractor shall submit to Architect a Project Directory listing subcontractors and vendors on the Project and giving a brief description of their scope of work, firm name, contact person, address, phone number, e-mail address, and fax number if used.

2.6 SHOP DRAWINGS

- A. Submit shop drawings as a copy of the original set maintained by the Contractor. Shop drawings are to include the name of the project, the name of Contractor and are to be

numbered consecutively. Provide legible and complete copies in every respect. Provide quantity as described below. Do not reproduce the Contract Drawings in lieu of Contractor or subcontractor produced shop drawings.

- B. If shop drawings show variations from Contract requirements because of standard shop practice or other reason, make specific mention of such variations in letter of transmittal, as well as on Drawings, in order that (if acceptable) suitable action may be taken for proper adjustment of the Contract Documents. Unless specific changes have been noted and approved, no deviations from Contract Documents will be accepted.

2.7 PRODUCT DATA / MATERIAL LISTS

- A. Manufacturer's Standard Schematic Drawings:
 - 1. Modify Manufacturer's drawings to delete information which is not applicable to the Project.
 - 2. Supplement standard information to provide additional information which is applicable to the Project.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products or models. Mark out or remove extraneous information.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.
 - 4. Show wiring diagrams and controls.

2.8 SAMPLES

- A. Samples: Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.
 - 1. Include identification on samples including product and material and location of proposed work.
- B. Samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of product or material, with integrally related parts and attachment devices.
 - 2. After review, samples may be used in construction of project.
- C. Field samples and mockups:
 - 1. Erect at project site at location acceptable to Architect.
 - 2. Construct each sample or mockup complete, including work of trades required in finished work.

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2.9 REQUESTS FOR INFORMATION (RFI)

- A. Requests for additional information (RFI's) beyond that set-forth in the Contract Documents will be considered when the request is in writing and fully documented. Requests shall state the source and reason for the request; identify specific references within the Contract Documents pertinent to the request; and supply supporting information to assist the Architect in his/her response. Verbal responses to such requests are to be considered informational; official response will only be given in writing.
 - 1. Submit RFI's on standard form, included with this Section, and numbered consecutively.
 - 2. Allow a minimum of 72-hours for review by Architect. Additional time may be required for more complex issues.
 - 3. Provide suggested solution on standard RFI form where indicated.
 - 4. Provide detailed cost estimate for RFI's that are anticipated to exceed \$500 in extra costs to the Owner.
- B. Because RFI's are used for clarification or Construction Document interpretation purposes, the response will be issued back to the Contractor in the space provided on the standard RFI form. More complex issues requiring Contract Document revisions and/or which may result in a change in cost to the Contract will be handled using a Construction Change Document (CCD). RFI's and CCD's will not be used to address simple or minor coordination or construction issues which can normally be addressed quickly and easily by the Contractor or in conjunction with the Contractor and Architect. RFI's deemed unnecessary or frivolous by the Architect will be returned to the Contractor for reconsideration or will be rejected. RFI's so returned shall be removed from the RFI log and noted as unnecessary.

2.10 CERTIFICATIONS

- A. Where specifically indicated by pertinent Specification Sections, submit proper certification of recognized producer or association in lieu of or in addition to testing. Certification shall attest to product's compliance with requirements of Contract Documents.
- B. Certifications for this project shall also include:
 - 1. Fire Alarm System Certification:
 - a. As specified in Division 28.
 - 2. Megger Grounding Test Certificate:
 - a. Submit completed Megger Grounding Test Certificate (included with this section) with Testing Agency reports attached, as specified in Division 26.
 - 3. Certificate of Compliance for Building Materials:
 - a. Submit completed Certification of Compliance for Building Materials (included with this section).

2.11 MAINTENANCE / OPERATION MANUALS

- A. General: Contractor shall incorporate in Maintenance/Operation Manual(s) brochures, manufacturer's catalogs and written instructions for equipment and materials needing regular care or maintenance. These items include carpets, resilient flooring, architectural finishes, mechanical and electrical equipment and other items as required elsewhere in Contract Documents. Prepare manuals in durable plastic loose leaf binders sized to accommodate 8-1/2 x 11 sheets with following minimum information:
 - 1. Identification on or readable through, front cover stating general nature of manual.
 - 2. Neatly typewritten index of contents.
 - 3. Site plan and building plans indicating location of equipment referenced (reduced scale).
 - 4. Complete instructions regarding operation and maintenance of equipment involved.
 - 5. Complete nomenclature of replaceable parts, their part numbers, current cost and name and address of nearest vendor of parts.
 - 6. Copy of warranties issued, in a separate binder as specified in this Section.
 - 7. Copy of approved shop drawings (reduced scale) with data concerning changes made during construction.
- B. Extraneous Data:
 - 1. Where contents of manuals include manufacturer's catalog pages, clearly indicate precise items included in the Project installation and delete, or otherwise clearly indicate, manufacturer's data with which the Project installation is not concerned.
- C. Materials shall be organized in a logical and consistent manner, by Specification Section number, with separating tabs clearly marked.
- D. When submitting electronic file via Newforma, materials shall be organized in order ascending by Specification Section number and including clear separation within one pdf file, following format prescribed in paragraphs A and B of this Article.

2.12 WARRANTIES AND GUARANTEES

- A. Contractor Standard Guarantee:
 - 1. Furnish Owner with its Standard Guarantee for work executed under this Contract, including approved extra work, to be absolutely free of defects of workmanship and materials for a period of two (2) years from the date of filing of the Notice of Completion.
 - 2. Under the terms of its warranty, Contractor shall guarantee to repair and make good defects and repair damage to other work caused thereby which may occur during the Warranty period at no cost to the Owner.
 - 3. Guarantees and warranties between Contractor and manufacturers and between Contractor and suppliers shall not affect the Guarantee and Warranty between Contractor and Owner.

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4. Contractor's Standard Guarantee shall be submitted on the Guarantee/Warranty form included in Section 01 7836, Warranties.
- B. Subcontractor Standard Guarantee:
1. Contractor shall countersign and furnish Owner with a Subcontractor Standard Guarantee from each Subcontractor for their work executed under this Contract, and approved extra work, to be free of defects of workmanship and materials for a period equal to the Contractor Standard Guarantee.
 2. Under the terms of its warranty, Subcontractor shall guarantee to repair and make good defects and repair damage to other work caused thereby which may occur during the Warranty period at no cost to the Owner.
 3. Subcontractors individual Standard Guarantee shall be submitted on Guarantee/Warranty form included in Section 01 7836, Warranties.
- C. Special or Extended Guarantee/Warranty:
1. In addition to the Contractor's and Subcontractor's Standard Guarantees, furnish Owner with special or extended warranties in excess of the Standard Warranty term of the Contract where specified in the respective Sections of the Specifications.
 2. Where special or extended guarantees are related to work of a Subcontractor, the written Guarantee/Warranty form prepared by the Contractor shall be co-signed by the respective responsible subcontractor and a separate and addition Guarantee/Warranty form shall be prepared by the Subcontractor and co-signed by the Contractor.
 3. Each Special or Extended Guarantee/Warranty shall be submitted on the forms included in Section 01 7836, Warranties.
- D. Provide a binder with the executed Guarantee/Warranty forms placed in the order in which they occur in the Project Manual. Include an Index listing each Specification Section, specific items covered and length of warranty for each item.
- E. When submitting electronic file via Newforma, materials shall be organized in order ascending by Specification Section number and including clear separation within one pdf file.

2.13 RECORD DRAWINGS AND SPECIFICATIONS

- A. The Contractor shall prepare and maintain on a current basis an accurate and complete set of Record Drawings and Annotated Specifications showing clearly the following:
1. Changes, revisions, and substitutions during construction, including, without limitation, field changes.
 2. Addenda, Construction Change Documents and Clarifications issued by the Architect.
 3. The final location of mechanical equipment, ducts, outlets, structural members, walls, partitions, and other significant features. Note both vertical and horizontal dimensions of concealed installations.

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4. Installed locations of underground work and utilities, including storm drain piping, plumbing, electrical and stubs for future connections. Note both vertical and horizontal locations of underground facilities from permanent monuments such as building corners or other permanent structures, and finish grades.
 5. In the event of a specification that allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished.
- B. The Contractor shall update the Record Drawings and Specifications as often as necessary to keep them current but no less often than weekly, and up-dated monthly, prior to and pursuant to approval of the progress payment application.
1. Record drawings and specifications are to remain on site and available for inspection by the District Representative, Project Inspector and the Architect.
 2. Changes shall be made in an accurate and legible manner by a qualified draftsman acceptable to Architect.
 3. Symbols and designations used in preparing Record Drawings shall match those used in the Contract Drawings.
- C. At project completion, the Record Drawings and Annotated Specifications shall be submitted by the Contractor for Owner's Project Inspector and Architect review and comment.
1. These will be returned to the Contractor for revisions. Once corrections have been completed the Inspector shall sign and date the record set coversheet noting it as acceptance of the completed Record Drawings and Specifications.
 2. Prior to Application for Final Payment, the original Record Drawings and Specifications are to be resubmitted **[on green bond]** to the Architect along with a scanned electronic file set in PDF format with each drawing bookmarked, matching the Drawing titles.
 3. When submitting electronic file via Newforma, materials shall be organized in order ascending by Sheet Number as shown on the Drawing Sheet Index within one pdf file.
- D. Conditions of Payments:
1. At the end of each month the Project Inspector will review the record drawings and specifications. If the records are incomplete, or incorrect, an appropriate amount of dollars, equivalent to the cost of uncovering the work to determine the locations of piping and the like, may be deducted from the next progress payment. The deducted sum will be withheld until the record drawings are updated and/or corrected.
 2. Written confirmation from the District Representative that the record drawings and specifications have been properly updated weekly shall be submitted with each pay application request, and the existence of such properly updated records shall be a condition precedent to payment.
 3. On completion of the Contractor's portion of the Work and prior to Application for Final Payment, the Contractor shall provide one complete set of approved Record Drawings and Specifications to the Owner, in format as specified, certifying them

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to be a complete and accurate reflection of the actual construction conditions of the Work. Delays in the submission of complete record documents may subject the Contractor to liquidated damages.

2.14 EXTRA STOCK

- A. Provide extra stock and materials, as described in the individual Specification Sections, to the Owner at time of final acceptance.
- B. Materials shall be inventoried in writing, neatly packaged, with labels clearly identifying contents and quantities.
- C. Contractor shall obtain written acceptance of delivery from Owner.

PART 3 - EXECUTION

3.1 GENERAL SUBMISSION REQUIREMENTS

- A. This project is using Newforma Info Exchange for transmission and processing of project documentation. The Contractor is responsible for making contract submissions through this web accessed system. No supplementary software is required for use. User names and passwords will be granted at the beginning of the project.
- B. Contractor is responsible for the scheduling of submittals in order to avoid detrimental impact to the construction schedule and to support the timely sequence of the Work.
 - 1. Allow a minimum of 15-working days for submittal review by the Architect. Complex submittals or submittals which are not provided as complete packages may take longer than 15-working days for review.
 - 2. Contractor shall allow time for potential rejection and re-submittal of submittals which are being offered as substitution to the specified products.
- C. Contractor shall review submittals for completeness, coordination and conflicts between subcontractors and other Work in the Contract Documents.
 - 1. Subcontractors shall make submittals to Contractor.
 - 2. Submittals made by subcontractors which are not thoroughly reviewed by the Contractor will be returned. Submittals which vary significantly from the Contract Documents and are not so identified prior to submission, will be returned to the Contractor without review.
- D. Mechanical and electrical submittals, excluding underground work, shall each be packaged together so that products/components for these two major disciplines are transmitted to the Architect as a single submittal package for review.
- E. Submittals shall be accompanied by Submittal Transmittal, included at the end of this Section, addressed to the Architect. Each submittal transmittal shall:
 - 1. Be consecutively numbered.

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2. Re-submittals to have same submittal number as the original submittal with an alphanumeric suffix.
3. Indicate Specification Section number. Separate submittals are required for each Specification Section involved.
4. Include proper number of copies, as required in "Number of Copies Required" below.
5. Contain index of items submitted, properly identified with Drawing numbers, etc.
6. Substitutions shall be accompanied by a completed Substitution Request Form (included with the Project Manual).

F. Electronic Submittals.

1. Product data submitted electronically shall be submitted in .pdf format. Submittals shall be organized in a logical format grouping items and subsections together. The first page of each item or subsection must be bookmarked and properly labeled. If multiple fixtures or products are included in a single submittal, each item and corresponding information shall be separately grouped and bookmarked as noted above. This formatting and bookmarking shall also apply to other data submitted electronically like warranties/guarantees, maintenance & operations manuals and certifications.
2. Shop drawings submitted electronically shall be submitted in .pdf format. Shop drawings shall be organized in a logical format grouping sections together (plans, elevations, details, schedules, etc.). Each sheet of the shop drawings shall be bookmarked and properly labeled. Plan references and detail callouts shall be hyperlinked to properly jump to the referenced page or detail.

G. Number of Copies Required - Contractor shall submit following number of copies:

1. Subcontractor List: 1-electronic copy in PDF format.
2. Progress Schedule: 1-electronic copy in PDF format.
3. Schedule of Values: 1-electronic copy in PDF format.
4. Shop Drawings: 1-electronic copy in PDF format.
5. Product Data/Material Lists: 1-electronic copy in PDF format.
6. Samples: As specifically indicated in the respective Specification Section or, if not indicated, two more than the Contractor requires to be returned.
7. Samples for Color/Pattern Selection: One set of manufacturer's complete range for initial selection; and 4 samples as requested of selected color/pattern for inclusion in final color boards.
 - a. As color selection is dependent on multiple submittals, it is critical that items requiring color decisions be submitted as early as possible and at the same time.
 - b. Selections will not be finalized until color dependent/selection submittals are received.
8. Substitution Request: 1-electronic copy in PDF format.
9. Request for Information: 1-copy.
10. Electronic Transfer: 1-copy.

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11. Certifications: 1-electronic copy in PDF format.
 12. Maintenance/Operations Manuals: After approved via Newforma submittal, 1-hard copy plus 1-electronic copy in format acceptable to the Owner.
 13. Guarantees/Warranties: After approved via Newforma submittal, 1-hard copy, plus 1-electronic copy in format acceptable to the Owner. Refer to Section 01 7836, Warranties, for forms and additional requirements for assembly of guarantees/warranties.
 14. Record Drawings: After approved via Newforma submittal, 1-hard copy plus 1-electronic copy in format acceptable to the Owner.
- H. Submittals shall include the following, as applicable:
1. Date and revision dates.
 2. Project title and number.
 3. The names of Architect, Contractor, Subcontractor and supplier or manufacturer.
 4. Identification of product or material.
 5. Relation to adjacent structure or material.
 6. Field dimensions, clearly identified as such.
 7. Specification section number.
 8. A blank space for Architect's stamp.
 9. Contractor's stamp on each, initialed or signed, certifying that submittal was reviewed, field measurements have been verified and submittal is in compliance with the applicable Specification Section and the overall Contract Documents.
- I. Incomplete, inaccurate or non-complying submittals requiring revisions, re-submittal and additional review time, shall not be considered as a basis for Contract time extension.

3.2 PROCEDURES FOR ACTION SUBMITTALS

- A. Action Submittals are identified in the respective Specification Section and shall be submitted in accordance with the specified web based access system.
- B. Number of Copies: As specified under Article "General Submission Requirements."
- C. Architect's Review:
1. General:
 - a. Except for finish, color, and other aesthetic matters left to Architect's decision by Contract Documents, Architect's review is only for Contractor's convenience in following work and does not relieve Contractor from responsibility for deviations from requirements of Contract Documents.
 - b. Do not construe Architect's review as a complete check or relief from responsibility for errors or omissions of any sort in shop drawings or schedules or from necessity of furnishing work required by Contract Documents that may not have been shown on shop drawings.
 - c. Architect's review of a separate item does not indicate review of complete assembly in which it functions.

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- d. Review comments of the Architect (or its consultants) will be shown when it is returned to the Contractor. The Contractor shall make and distribute such copies as are required for its purposes.

D. Processing:

- 1. Architect will review Action Submittals in accordance with agreed upon "Submittal Schedule" and will return them to Contractor with Architect's stamp.
- 2. Notations by Architect which increase Contract cost or time of completion shall be brought to Architect's attention before proceeding with work. Failure to do so will result in the increased costs being borne by the Contractor.
- 3. Each submittal will be stamped indicating appropriate action to be taken by the Contractor.
- 4. If for any reason the Contractor cannot comply with the notations, Contractor shall re-submit submittal. In the transmittal letter accompanying the re-submittal, clearly describe the reason(s) for not being able to comply with the notations.

E. Action and Distribution:

- 1. Architect will stamp submittals and Contractor shall comply with action noted on the Architect's "Submittal Review" stamp.
- 2. Unless otherwise directed for mutually agreed or required by the Architect's stamp, Architect will return submittals to the Contractor via the specified web access system.
- 3. If corrections are required, the Contractor is responsible for making the necessary corrections and re-submitting the shop drawings in a timely fashion as to not affect the project schedule.
- 4. The Contractor shall secure final acceptance prior to commencing work involved.

F. Consultants' Review:

- 1. Submittals requiring review by Architect's or Owner's consultants shall be uploaded to the specified web access system for distribution by the Architect.
- 2. Processing shall be in accordance with consultants stamp.
 - a. If action required by consultants stamp is not clear, Contractor shall immediately notify the Architect for a clarification.
 - b. If returned submittal also includes the Architect's stamp, processing shall be in accordance with the Architect's stamp.

G. Revisions:

- 1. If revisions are required, the Contractor is responsible for making the necessary changes pertinent to by comments noted on the submittal and re-submitting the shop drawings in a timely fashion as to not affect the project schedule.
- 2. If the Contractor considers any required revision to be a change, they shall so notify the Architect.
- 3. Show each revision by number, date, and subject in a revision block on the submittal.

SUBMITTAL PROCEDURES
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4. If for any reason Contractor cannot comply with the notations, Contractor shall resubmit submittal.

H. Revisions after Review: When a submittal has been reviewed by the Architect, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

3.3 PROCEDURES FOR INFORMATIONAL SUBMITTALS

A. Informational Submittals are identified in the respective Specification Section and shall be submitted in accordance with the specified web based access system.

B. Number of Copies: As specified under Article "General Submission Requirements."

C. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

D. Test and Inspection Reports: Comply with requirements specified in Section 01 4523, Testing and Inspection Services.

3.4 PROCEDURES FOR CLOSEOUT AND MAINTENANCE MATERIAL SUBMITTALS

A. Closeout and maintenance material submittals are identified in the respective Specification Section and shall be submitted as specified or, if not specified, in accordance instructions provided by the Architect.

B. Comply with the additional requirements specified in Section 01 7700, Closeout Procedures.

3.5 FORMS

A. The following submittal forms are included as part of this Section.

1. Submittal Transmittal.
2. Substitution Request.
3. Request for Information.
4. Electronic Data Request.
5. Megger Grounding Test Certificate.
6. Certification of Compliance for Building Materials.

END OF SECTION

District Warehouse IT Office Addition
Lodi Unified School District

SUBMITTAL NO.:

Architect's Project # 3431006

DATE: _____

DSA File/Apl. # N/A

Re-Submittal of Original No.: _____

1. SUBMITTAL TRANSMITTAL

Attention: Jennifer Huang

Contractor: Company

Contact: Name _____

Sub Contractor:

Contact: _____

HMC
Architects

Please submit only one trade per submittal! Description of submitted materials:

Quantity submitted	Specification Section		Description of contents (e.g. product data, shop drawings, samples)
	Section #	Section Title	

Contractor Statement: (read and acknowledge)

This submittal has been reviewed and approved with respect to the means, methods, techniques, and procedures of construction, safety precautions, and program incidentals thereto. This submittal complies with the contract documents and comprises no variations thereto, unless accompanied by a substitution request.

By: _____
Name

Date: _____

2. RE-TRANSMITTAL TO CONTRACTOR:

Distribution: Contractor, Owner, Project Inspector, RGA, Other

- | | | |
|--|--|---|
| ☐ NO EXCEPTIONS TAKEN | ☐ REJECTED | ☐ FURNISH AS CORRECTED |
| ☐ SUBMIT SPECIFIED ITEM | ☐ REVISE AND RESUBMIT | ☐ NO ACTION REQUIRED |

Corrections or comments made on the shop drawings during this review do not relieve the Contractor from compliance with requirements of the Drawings and Specifications. This general check is only for the review of conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all the other trades, and performing his work in a safe and satisfactory manner.

HMC ARCHITECTS

By: _____ Date: _____

Additional Comments:

See Specification Section 01 3300 for use of this form

District Warehouse IT Office Addition
Lodi Unified School District

**SUBSTITUTION
REQUEST NO.:**

Architect's Project # 3431006
DSA File/Appl. # N/A

Date: _____

1. SUBSTITUTION REQUEST

Attention: Jennifer Huang

HMC
Architects

Contractor: Company _____

Contact: Name _____

Please submit only one product per request!

Sub Contractor: _____

Include with a specified product Submittal

Contact: _____

2. PROPOSED SUBSTITUTIONS: The undersigned requests consideration of the following substitution:

Specified Item: _____ Page No.: _____ Paragraph No.: _____

Proposed Item: _____

3. REASON FOR REQUEST:

4. REQUIREMENTS FOR SUBSTITUTIONS:

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of request; applicable portions of data are clearly identified. Attached data also includes a description of changes to Contract Documents, which proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed substitution does not affect dimensions shown on drawings and does not require design changes in the Contract Documents.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on the work, the schedule or specified warranty requirements.
4. Maintenance and service parts will be readily available for the proposed substitution.

The undersigned further states that the function, appearance and quality of the proposed substitution are equivalent or superior to the specified item.

Signature - Contractor/Subcontractor

Date

5. TRANSMITTAL TO CONTRACTOR:

Distribution: Contractor, Owner, Project Inspector, RGA, Other

☐ ACCEPTED

☐ ACCEPTED AS NOTED

☐ REJECTED

HMC ARCHITECTS

By: _____

Date: _____

Comments:

District Warehouse IT Office Addition
Lodi Unified School District

RFI NO.:

Architect's Project # 3431006
DSA File/Apl. # N/A

Date: _____

1. REQUEST FOR INFORMATION

Attention: Jennifer Huang

From:

Contractor:

Company _____

Contact: _____

Name _____

Sub Contractor: _____

Contact: _____

HMC
Architects

Identify related specific references within the Contract Documents and supporting information:

Dwg./Document No.: _____

Building/Site Location: _____

2. Existing Condition (source / reason for the request):

3. Recommended Contractor Action(s) for resolution:

4. Project Inspector Acknowledgment:

Date Reviewed: _____

5. Owner / A/E Resolution(s):

Date of Response: _____ By: _____

Attachments: _____

Extra Work Involved in the Above Described Change?

Yes ☐

No ☐

Distribution: Contractor, Owner, Project Inspector, HMC, Other
See Specification Section 01300 for use of this form

HMC, Other

District Warehouse IT Office Addition
Lodi Unified School District

**E-DATA
REQUEST NO.:**

Architect's Project # 3431006
DSA File/Apl. # N/A

Date: _____

1. ELECTRONIC DATA REQUEST

Attention: Jennifer Huang

From: Contractor: Company

Contact: Name

HMC
Architects

Sub Contractor:

Contact: _____

2. DATA REQUESTED - Provide list of specific drawings requested (include sheet numbers):

3. REASON FOR REQUEST - Provide clear explanation of why information is desired and for what purpose it will be utilized:

4. ACKNOWLEDGEMENT OF RESPONSIBILITY:

The electronic data files requested are distributed for reference only. Transferring such files can alter, delete or change original information. Accuracy of the data cannot be guaranteed as correct or complete and the Contractor accepts full responsibility for any and all inaccuracies, regardless of cause.

The hard copy documents, including addenda and subsequent written changes to the documents, represent the complete work of the contract and all electronic files should be cross-referenced and verified from that information as electronic files may not contain all contract information. It is the Contractor's responsibility to make any changes or revisions necessary.

This electronic data is furnished without guarantee of compatibility with your hardware or software. It is the Contractor's responsibility to notify the Architect in the event a compatibility problem or disk defect is encountered and a replacement disk is necessary.

This electronic data, in its present form, remains the property of HMC Architects and shall not be used for any other purpose than to provide background information for the project noted above. It is not to be released to any other party without the written consent of HMC Architects.

Accepted by: _____
Signature - Contractor/Subcontractor

Representing: _____
Contractor/Subcontractor Company Name

MEGGER GROUNDING TEST CERTIFICATE

This certifies that a Megger Grounding Test for the **District Warehouse IT Office Addition** for the **Lodi Unified** School District, of **San Joaquin** County, California was conducted on the _____ day of _____, **2024**, per CCR Title 24, Sections 200 H and J.

The undersigned verifies that the resistance to ground was 25 ohms or less, as required, and is found to be acceptable.

Project Name: _____

DSA File No.: _____ DSA Application No.: _____

Address: _____

General Contractor's Signature: _____

Electrical Contractor's Signature: _____

Testing Agency's Signature: _____

District Inspector's Signature: _____

SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE

CERTIFICATION OF COMPLIANCE FOR BUILDING MATERIALS

This is to certify, in accordance with the Environmental Protection Agency requirements, that the materials and equipment used in the construction of the **District Warehouse IT Office Addition** for the **Lodi Unified** School District of **San Joaquin** County, California, are asbestos free and are, therefore, not subject to monitoring for asbestos contamination.

Project Name: _____

Address: _____

Contractor: _____

Address: _____

Signature: _____

Title: _____

Date: _____

SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Alteration requirements for modernizations, remodels, and additions.

1.2 RELATED REQUIREMENTS

- A. Section 01 1100, Summary of Work.
- B. Section 01 5000, Temporary Facilities and Controls.
- C. Section 01 7329, Cutting and Patching.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Contractor to coordinate and conduct a meeting with the demolition contractor to verify which systems, if any, are to be protected and maintained. Such systems shall be clearly identified and marked to avoid unnecessary damage or removal.
 - 2. Coordinate work of alterations and renovations to expedite completion sequentially and to accommodate Owner occupancy.

1.5 QUALITY ASSURANCE

- A. Manufacturer and Installer Qualifications: As specified in the product specifications.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single Source Responsibility: Use materials and products of one manufacturer whenever possible.
- D. 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.

ALTERATION PROJECT PROCEDURES
SECTION 01 3516
3431006

1.6 FIELD CONDITIONS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in product Sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspection and testing products where necessary, referring to existing work as a standard.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that demolition is complete and areas are ready for installation of new work.
- B. Inspect conditions of uncovered work affecting installation of products or performance work.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. Beginning of restoration work means acceptance of existing conditions.
- E. In event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PREPARATION

- A. Close openings in exterior surfaces to protect existing work and salvage items for weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.
- B. Cut, move or remove items as necessary for access to alterations and renovation work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete.
- E. Prepare surface, and remove surface finishes to provide for proper installation of new work and finishes including blocking, framing, insulation, etc.
- F. Replace materials as specified for finished work.

3.3 INSTALLATION

- A. Complete Project in all respects including operational mechanical and electrical work.
- B. Remove, cut and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to original condition, and installation of concealed work, as specified in Section 01 7329, Cutting and Patching,
- C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- D. Install products as specified in individual specifications Sections.
- E. Where materials or equipment are removed, but no new finish is scheduled, patch and repair any damage to match existing wall surface.

3.4 TRANSITIONS

- A. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work is to match existing adjacent work in texture and appearance.
- B. 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 point of division and make recommendation to Architect.

3.5 ADJUSTMENTS

- A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls and ceilings to a smooth plane without breaks, steps or bulkheads.
- B. Where a change of plane of 1/8" or more occurs, submit recommendation for providing a smooth transition for Architect review.
- C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- D. Fit work at penetrations of surfaces as specified in Section 01 7329.

3.6 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.

3.7 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.

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- C. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.8 CLEANING

- A. Upon completion of installation, remove manufacturer's temporary labels and marks of identification. Thoroughly clean surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition.

3.9 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. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

END OF SECTION

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Last Updated: December 16, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Special environmental, sustainable, and “green” building practices related to indoor air quality, resource efficiency supplementing the Pollutant Control requirements specified under Section 01 8113.10, Sustainable Design Requirements, and to ensure healthy indoor air quality in final Project.
- B. Contractor is required to comply with sustainable building practices during construction and when considering materials for substitutions. Refer to Article “Design Requirements.”

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions.
- B. Section 01 7419, Construction Waste Management and Disposal.
- C. Section 01 8113, Sustainable Design Requirements.
- D. Division 23, Mechanical General Conditions.
- E. Division 23, Packaged Air Conditioning Units.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
 - 3. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.

1.4 DESIGN REQUIREMENTS

- A. Owner has established general environmental goals for design and for construction of the Project.
 - 1. In addition to the Contractor, the Contractor’s construction team, including subcontractors, suppliers, and manufacturers, are encouraged to participate where possible to realize the Owner’s environmental goals.
 - 2. Intent is for environmental goals to be achieved in a manner which ultimately provides a safe and healthy environment for building occupants with minimal impact on the local, regional and global environment.
- B. Environmental Goals:

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1. Refer to specific Specifications Sections for more detailed construction requirements related to specific materials and systems.

1.5 INFORMATIONAL SUBMITTALS

A. Indoor Air Quality (IAQ) Data:

1. Environmental Issues: Submit emission test data produced by acceptable testing laboratory, listed in this Specification Article "Quality Assurance," for materials as required in each specific Specification Section.
 - a. Laboratory reports shall contain emissions test data on Volatile Organic Compounds (VOCs) including Total Volatile Organic Compounds (TVOC), specific individual VOCs, formaldehyde and other aldehydes as described in this Section.
 - b. Identify VOCs emitted by each material as required in these Specifications, and demonstrate compliance with the California Green Building Standards Code, edition current as of the date of this Contract.
 - c. Specific test conditions and requirements are set forth in the Specifications. For required tests, submit documentation of sample acquisition, handling, and test specimen preparation, as well as test conditions, methods, and procedures. The tests consist of a 10-day conditioning period followed by a 96-hour test period.
 - 1) Samples collected during the test period at 24, 48, and 96-hours shall be analyzed for TVOC and formaldehyde.
 - 2) VOC samples collected at 96 hours shall be identified and quantified for compounds that are found on the list of Chemicals of Concern. The Chemicals of Concern list is based on the California OEHHA list as of September 2002 (The most recent list shall be used for this Specification as published at:
 - a) http://www.oehha.org/air/chronic_rels/allChrels.html.
2. Cleaning and Maintenance Products: Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products. These procedures are for final Contractor cleaning of the project prior to Substantial Completion and for provided materials and products as required by the specific Specification Sections.
 - a. Where chemical products are recommended for these procedures, provide documentation to indicate that no component present in the cleaning product at more than 1 percent of the total mass of the cleaning product is a carcinogen or reproductive toxicant as identified in the Chemicals of Concern list referenced above.
 - b. Avoid cleaning products containing alpha-pinene, d-limonene or other unsaturated carbon double bond alkenes due to chemical reactions with ozone to form aldehydes, acidic aerosols, and ultra-fine particulate matter in indoor air.

B. Certificates:

1. Prior to Final Completion, submit a certificate signed by corporate office holder of Contractor, subcontractor, supplier, vendor, installer or manufacturer primarily responsible for the manufacturing of the product, indicating materials provided are essentially the same, and contain essentially the same components as products and materials tested.
2. Comply with requirements specified in Specification Section 01 7700, Closeout Procedures.

1.6 CLOSEOUT SUBMITTALS

- A. Submit data relating to Environmental Issues.
 1. Submit environmental product certifications, in two forms:
 - a. Two CD-ROMs organized by CSI Division Format.
 - b. Three three-ring binders organized by CSI Division Format with Table of Contents and with dividers for each Division.

1.7 QUALITY ASSURANCE

- A. Environmental Project Management and Coordination: Contractor to identify one person on Contractor's staff to be responsible for environmental issues compliance and coordination.
 1. Experience: Environmental project manager shall have experience relating to sustainable building construction.
 2. Responsibilities: Carefully review the Contract Documents for environmental issues, coordinate work of trades, subcontractors, and suppliers; instruct workers relating to environmental issues; and oversee Project Environmental Goals.
 3. Meetings: Discuss Environmental Goals at following meetings.
 - a. Pre-construction meeting.
 - b. Pre-installation meetings.
 - c. Regularly scheduled job-site meetings.
 - d. Special sustainability issues meetings.
- B. Environmental Issues Criteria: Comply with requirements listed in the Specification Sections.
- C. Acceptable Indoor Air Emissions Testing Laboratories:
 1. Selection of testing laboratories shall include assessment of prior experience in conducting indoor source emissions tests.
 2. The proposed laboratory shall be an independent company or organization not related to the manufacturer of the products to be tested.
 3. Submit documentation on proposed laboratory for review and approval by Owner.

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1.8 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Deliver materials in recyclable or in reusable packaging such as cardboard, wood, paper, or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.
 - 1. Minimize packaging materials to maximum extent possible while still ensuring protection of materials during delivery, storage, and handling.
 - 2. Unacceptable Packaging Materials: Polyurethane, polyisocyanate, polystyrene, polyethylene, and similar plastic materials such as “foam” plastics and “shrink-fit” plastics.
 - 3. Reusable Blankets: Deliver and store materials in reusable blankets and mats reclaimed by the manufacturers or suppliers for reuse where the reclamation program exists or where a program can be developed for such reuse.
 - 4. Pallets: Where pallets are used, suppliers shall be responsible to ensure pallets are removed from site for reuse or for recycling.
 - 5. Corrugated Cardboard and Paper: Where paper products are used, recycle as part of the construction waste management recycling program, or return to the material’s manufacturer for use by the manufacturer or supplier.
 - 6. Sealants, Paint, Primers, Adhesives, and Coating Containers: Return to the supplier or manufacturer for reuse where such program is available.
- B. Comply with the additional requirements specified in Section 01 7419, Construction Waste Management and Disposal.

1.9 FIELD CONDITIONS

- A. No smoking will be permitted in indoor Project site locations, in accordance with California Labor Code (Section 400-6413.5).
- B. Environmental Product Certification:
 - 1. Include certification that indicates cleaning materials comply with requirements of these Specifications.
- C. Construction Ventilation and Preconditioning:
 - 1. Temporary Construction Ventilation: Maintain sufficient temporary ventilation of areas where materials are being used that emit VOCs. Maintain ventilation continuously during installation, and until emissions dissipate following installation. If continuous ventilation is not possible utilizing the building’s HVAC system(s) then ventilation shall be supplied using open windows and temporary fans, sufficient to provide no less than three air changes per hour.
 - a. Period after installation shall be sufficient to dissipate odors and elevated concentrations of VOCs. Where no specific period is stated in these Specifications, a time period of 72 hours shall be used.
 - b. Ventilate areas directly to outside; ventilation to other enclosed areas is not acceptable.

2. During dust producing activities, including drywall installation and finishing, turn ventilation system off, and openings in supply and return HVAC system shall be protected from dust infiltration. Provide temporary ventilation as required.
3. Preconditioning: Prior to installation, allow products which have odors and significant VOC emissions to off-gas in dry, well-ventilated space for 14 calendar days to allow for reasonable dissipation of odors and emissions prior to delivery to Project site and installation.
 - a. Condition products without containers and packaging to maximize off-gassing of VOCs
 - b. Condition products in ventilated warehouse or other building. Comply with substitution requirements for consideration of other locations.

D. Protection:

1. Moisture Stains: Materials with evidence of moisture damage, including stains, are not acceptable, including both stored and installed materials; immediately remove from site and properly dispose.
 - a. Take special care to prevent an accumulation of moisture on installed materials and within packaging during delivery, storage, and handling to prevent development of molds and mildew on packaging and on products
 - b. Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.
 - c. Replace moldy materials with new, undamaged materials.
2. Ducts: Seal ducts during transportation, delivery, and construction to prevent accumulation of construction dust and construction debris inside of ducts.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Requests for substitutions shall comply with requirements specified in Specification Section 01 3300, Submittals, and with the following additional information required where environmental issues are specified:
 1. Indicate how each proposed substitution complies with requirements for VOCs.
 2. Owner, in consultation with Architect reserve the right to reject proposed substitutions where data for VOCs is not provided or where emissions of individual VOCs are higher than for the specified materials.
 3. Comply with the specified recycled content and other environmental requirements.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Sequencing:

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1. On-Site Application: Where odorous and/or high VOC emitting products are applied on-site, apply prior to installation of porous and fibrous materials. Where this is not possible, protect porous materials with polyethylene vapor retarders.
 2. Complete interior finish material installation no less than 14 days prior to Substantial Completion to allow for Building Flush Out as described in Paragraph 3.1B.
- B. Building Flush Out: Just prior to Substantial Completion, flush out building air continuously using maximum tempered outside air, or maximum amount of outside air while achieving reasonable indoor temperature, for at least 14 calendar days. Continuously is defined as 24 hours per day, 7 days a week. If interruptions of more than a few hours are required for testing and balancing purposes, extend flush out period accordingly in order to achieve the minimum 14 calendar day building flush out period.
1. When Contractor is required to perform touch-up work, provide temporary construction ventilation during installation and extend building flush-out by a minimum of 4 calendar days after touch-up installation is complete with maximum tempered outside air for 24 hours per day.
 2. If construction schedule permits, extend flush-out period beyond minimum building flush out period for an additional 15 days.
 3. Return ventilation system to normal operation following flush-out period to minimize energy consumption.

3.2 CLEANING

- A. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces using cleaning and maintenance products that conform to standards as described in Part 1 of this Section.
- B. Clean equipment and fixtures to sanitary condition using cleaning and maintenance products that conform to standards as described in Part 1 of this Section.
- C. Products used for cleaning shall comply with Proposition 65 and the additional restrictions for volatile organic compounds specified in Section 01 6116.
- D. Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) vacuum.
- E. If ducts were not sealed during construction, and contain dust or dirt, clean ducts using HEPA vacuum immediately prior to Substantial Completion and prior to using ducts to circulate air. Oil film on sheet metal shall be removed before shipment to site. Ducts shall be inspected to confirm that no oil film is present. Remove oil film.
- F. Replace air filters, both pre and final filters, just prior to Substantial Completion.
- G. Remove and properly dispose of recyclable materials using construction waste management program described in Section 01 7419, Construction Waste Management and Disposal.

3.3 PROTECTION

- A. Protect interior materials from water intrusion or penetration where interior products are not intended for wet applications and are exposed to moisture.
- B. Protect installed products using methods that do not support growth of mold and mildew.
 - 1. Immediately remove from site materials with mold or mildew.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Standard reference abbreviations use in the Project Manual.
 - 2. Requirements for standard references use in the various Specification Sections.

1.2 STANDARD SPECIFICATIONS

- A. The contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, work quality, installation, inspections and tests published and issued by the organizations, societies, and associations. Such references are hereby made part of the Contract Documents to the extent required.
- B. When standard specifications are included by abbreviation and number only, it is assumed that the Contractor is familiar with and has ready access to the specified standards.
- C. When the effective date of a reference standard is not given, it shall be understood that the current edition or latest revision thereof and any amendments or supplements thereto in effect on the date of original issue of these Contract Documents, as indicated on the cover, shall govern the Work.
- D. Reference standards are not furnished with the contract Documents, because the Contractor, subcontractors, manufacturers, suppliers, and the trades involved are assumed to be familiar with their requirements
- E. Contractor shall obtain its own copies of required specified referenced publications.
- F. The specification or standard referred to shall have full force and effect as though printed in these specifications.
- G. In addition to those standards specifically referenced in the Specifications, comply with the accepted industry standards and trade association recommendations for the respective portions of Work.
- H. In the case of difference between referenced standards and the Contract Documents, the most stringent requirements prevail.

1.3 STANDARD SPECIFICATION ABBREVIATIONS

- A. In addition to abbreviations indicated on the Drawings, references in the Project Manual to trade associations, technical societies, recognized authorities, and other institutions may include the following organizations, which are sometimes referred to by only the corresponding abbreviations. Not all abbreviations are listed, and not all listed abbreviations are used.
- B. Initialisms and Acronyms:

ABBREVIATIONS AND ACRONYMS

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1.	AA	Aluminum Association
2.	AAMA	American Architectural Manufacturers Association
3.	AASHTO	American Association of State Highway and Transportation Officials
4.	AATCC	American Association of Textile Chemists and Colorists
5.	ABAA	Air Barrier Association of America
6.	ACI	American Concrete Institute
7.	ACS	Access Compliance Section (DSA)
8.	ACSE	American Society of Civil Engineers
9.	ADA	American with Disabilities Act
10.	AGA	American Galvanizers Association
11.	AIA	American Insurance Association (successor to NBFU)
12.	AISC	American Institute of Steel Construction
13.	AISI	American Iron and Steel Institute
14.	AITC	American Institute of Timber Construction
15.	ALSC	American Lumber Standards Committee
16.	ANSI	American National Standards Institute
17.	APA	The Engineered Wood Association
18.	ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning
19.	ASTM	ASTM International
20.	AWI	Architectural Woodwork Institute
21.	AWPA	American Wood Protection Association
22.	AWS	American Welding Society
23.	BHMA	Builders Hardware Manufacturers Association
24.	CALGreen	California Green Building Standards Code
25.	CBC	California Building Code
26.	CEC	California Electrical Code
27.	CFC	California Fire Code
28.	CLFMI	Chain Link Fence Manufacturing Institute
29.	CMC	California Mechanical Code
30.	CPC	California Plumbing Code
31.	CRA	California Redwood Association
32.	CRI	Carpet and Rug Institute
33.	CRSI	Concrete Reinforcing Steel Institute
34.	CS	Commercial Standard of National Bureau of Standards (US Dept of Commerce)
35.	DHI	Door and Hardware Institute
36.	DSA	Division of the State Architect
37.	DTSC	Department of Toxic Substances Control
38.	EPA	Environmental Protection Agency
39.	FDA	U.S. Food and Drug Administration

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40.	FLS	Fire & Life Safety (DSA)
41.	FM	Factory Mutual
42.	FS	Federal Specification of General Services Administration
43.	FSC	Forest Stewardship Council
44.	GA	Gypsum Association
45.	HMMA	Hollow Metal Manufacturers Association
46.	ICC-ES	International Code Council Evaluation Service
47.	ISO	International Organization for Standards
48.	MIA	Masonry Institute of America
49.	MMPA	Moulding and Millwork Producers Association
50.	MPI	Master Painters Institute
51.	NAAMM	National Association of Architectural Metal Manufactures
52.	NAAWS	North American Architectural Woodwork Standards
53.	NBFU	National Board of Fire Underwriters (See AIA)
54.	NBHA	National Builders Hardware Association
55.	NEC	National Electric Code of NFPA
56.	NEMA	National Electrical Manufacturers Association
57.	NFPA	National Fire Protection Association
58.	NFSHSA	National Federation of State High School Associations
59.	NRCA	National Roofing Contractors Association
60.	OSHA	Occupational Safety and Health Administration
61.	PCA	Portland Cement Association
62.	PCI	Precast Concrete Institute
63.	PI	Project Inspector
64.	PLIB	Pacific Lumber Inspection Bureau
65.	RIS	Redwood Inspection Service (Grading Rules)
66.	SCAQMD	South Coast Air Quality Management District
67.	SEI	Structural Engineering Institute
68.	SDI	Steel Door Institute
69.	SJI	Steel Joist Institute
70.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
71.	SMF	Office of the State Fire Marshal
72.	SPR	Simplified Practice Recommendation (US Dept. of Commerce)
73.	SSMA	Steel Stud Manufacturers Association
74.	SSPC	The society for Protective Coatings
75.	SWPPP	Storm Water Pollution Prevention Plan
76.	TCNA	Tile Council of North America
77.	Title 19	California Code of Regulations - Public Safety
78.	Title 24	California Code of Regulations - Building Codes
79.	TMS	The Masonry Institute

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| 80. | UL | Underwriter's Laboratories, Inc. |
| 81. | WCLIB | West Coast Lumber Inspection Bureau (successor to WCLA) |
| 82. | WDMA | Window and Door Manufacturers Association |
| 83. | WI | Woodwork Institute |
| 84. | WRCLA | Western Red Cedar Lumber Association |
| 85. | WWPA | Western Wood Products Association |

END OF SECTION

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acronyms.docx*

Last Updated: December 16, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Definitions of terms and requirements pertaining to the contract documents,

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to work of this section.

1.3 DESCRIPTION OF REQUIREMENTS

- A. General Explanation: A substantial amount of specification language consists of definitions for terms found in other contract documents, including the drawings. (Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated thereon.) Certain terms used in contract documents are defined in this Section. Definitions and explanations contained in this section are not necessarily either complete or exclusive, but are general for the work to the extent that they are not stated more explicitly in another element of the Contract Documents.
- B. General Requirements: The provisions or requirements of Division 1 sections apply to entire work of Contract and, where so indicated, to other elements which are included in project.
- C. Governing Regulations: Refer to General Conditions for requirements related to compliance with governing regulations.
- D. Abbreviations: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in sections at first instance of use. Trade association names and titles of general standards are frequently abbreviated.

1.4 DEFINITIONS

- A. Approve: Where used in conjunction with Architect's/ Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Architect's/Engineer's responsibilities and duties as specified in General Conditions. In no case will "approval" by Architect/Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.
- B. Directed, Requested, etc.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and

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"permitted" mean "directed by Architect", "requested by Architect", and similar phrases. However, no such implied meaning will be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.

- C. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, unloaded, ready for assembly, installation, etc., as applicable in each instance. See Also "Provide".
- D. Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on drawings, to other paragraphs or schedules in the specification, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- E. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance. See also "Provide".
- F. Installer: The term "installer" is defined as the entity (person or firm) engaged by the Contractor, its subcontractor or sub-subcontractor for performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in the operations they are engaged to perform.
- G. Minimum Quality/Quantity: In every instance, the quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, the actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted, or as appropriate for context of the requirements. Refer instances of uncertainty to Architect for decision before proceeding.
- H. Project Site: The term "project site" is defined as the space available to the Contractor for performance of the work, either exclusively of or in conjunction with others performing other work as part of the project. The extent of the project site is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be built.
- I. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- J. Specialists, Assignments: In certain instances, specification test requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended

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to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the Contractor.

- K. Testing Laboratory: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere, and to report, and (if required) interpret results of those inspections or tests.
- L. Trades: Except as otherwise indicated, the use of titles, such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

1.5 DRAWING SYMBOLS:

- A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated.
- B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by more specific symbols as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect/Engineer for clarification before proceeding.

1.6 INDUSTRY STANDARDS:

- A. General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies were bound herewith. Refer to other contract documents for resolution of overlapping and conflicting requirements which result from the application of several different industry standards to the same unit of work. Refer to individual unit of work sections for indications of which specialized codes and standards the Contractor must keep at the project site, available for reference.
- B. Referenced Standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.
- C. Non-referenced Standards are hereby defined as having no particular applicability to the work, except as a general requirement of whether the work complies with standards recognized in the construction industry.
- D. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

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- E. Copies of Standards: The contract documents require that each entity performing work be experienced in that part of the work being performed. Each entity is also required to be familiar with recognized industry standards applicable to that part of the work. Copies of applicable standards are not bound with the contract documents.
1. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.
 2. Although a certain number of copies of these standards may be required as a part of the submittal, the Architect/Engineer reserves the right to require the Contractor to submit additional copies of these standards as necessary for enforcement of the requirements.
- F. Acronyms: Where acronyms are used in the specifications or other contract documents they are defined to mean the industry recognized name of the trade association, standards generating organization, governing authority or other entity applicable to the context of the test provision.

1.7 GOVERNING REGULATIONS/AUTHORITIES

- A. General: The procedure followed by Architect/Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing contract documents; recognizing that such information may or may not be of significance in relation to Contractor's responsibilities for performing the work. Contact governing authorities directly for necessary information and decisions having a bearing on performance of the work.
- B. "Regulations" is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.

1.8 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipt for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements related to inspections, tests, and related quality control procedures required to be performed by the Contractor and that facilitate the Contractor's compliance with the Contract Documents.

1.2 RELATED REQUIREMENTS

- A. Section 01 3300, Submittal Procedures; submission of manufacturers' instructions and certificates.
- B. Section 01 4523, Testing and Inspecting Services, and DSA 103; Special Tests and Inspections required by authorities having jurisdiction and are the responsibility of Owner.
- C. Section 01 7700, Closeout Procedures.
- D. Specific requirements for testing, inspections, mockups, and other quality control requirements as described in the various Sections of the Specifications.

1.3 DEFINITIONS

- A. Experienced: When used with an entity or individual, and unless otherwise specified, means having successfully completed a minimum of three previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
- D. Mockups: Full-size, physical assemblies that are constructed on-site and in-place mockups to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, interface, testing, and operation of various building components. Mockups are not samples.
- E. Tests: Procedures intended to establish the quality, performance, or reliability of a product or system conducted by a qualified Testing Agency.
- F. Source Quality-Control Tests: Tests and inspections related to materials manufactured or fabricated away from the jobsite that will be incorporated into the work.

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- G. Testing Agency: An independent entity engaged to perform specific tests, inspections, or both, is qualified to operate in California, and meets the additional requirements specified.
 - 1. Testing laboratory shall mean the same as Testing Agency.
- H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include Contract administration activities performed by Architect.

1.4 REFERENCES AND STANDARD SPECIFICATIONS

- A. General:
 - 1. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, work quality, installation, inspections, and tests published and issued by the organizations, societies, and associations.
 - 2. Contractor shall obtain its own copies of required specified referenced publications.
 - 3. The specification or standard referred to shall have full force and effect as though printed in these Specifications.
 - 4. When the effective date of a reference standard is not specified, it shall be understood that the current edition or latest revision thereof and any amendments or supplements thereto in effect on the date of the DSA approval, shall govern the Work.
 - 5. The contractual relationships, duties, and responsibilities of the parties in Contract or those of the Architect shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
- B. Products or workmanship specified by association, trade, or other consensus standards shall comply with requirements of the referenced standard or specification except when more rigid requirements are specified or are required by applicable codes.
- C. Conflicting Requirements:
 - 1. If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
 - 2. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.

1.6 INFORMATIONAL SUBMITTALS

- A. Schedule of Tests and Inspections.
- B. Field Superintendent's Quality Control Responsibilities
- C. Procedures for inspection prior to subsequent Work or cover up.
- D. Qualifications of Contractor's Testing Agencies.
- E. Certified copies of Reports and Documents.

1.7 CLOSEOUT SUBMITTALS

- A. Permits, Licenses, and Certificates: Copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.
- B. Test and Inspection Log including final record for each test and inspection as specified in Part 3 and in accordance with Section 01 7839, Project Record Documents.

1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports where specified in the Specification Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

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11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.

1.9 QUALITY ASSURANCE

- A. Minimum Quantity or Quality Levels:
1. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.
 2. Refer uncertainties to Architect for a decision before proceeding.
- B. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- C. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- D. Correct conditions or workmanship not in conformance with specified standards or quality. Do so immediately after non-conformance item is discovered or within a reasonable time frame agreed upon with Construction Manager.
- E. Comply with manufacturers' instructions, including each step in sequence. Should manufacturers' instructions conflict with Contract Documents, request clarification from the Architect before proceeding.
- F. Comply with specified standards as minimum quality for the Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- G. Perform Work by persons qualified to produce required and specified quality.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- I. Upon delivery to the jobsite, materials and products shall be inspected for compliance with the Project Specifications.
1. Nonconforming materials, products, equipment, hardware, tools and/or safety devices shall be removed immediately from the general work area and stored within a secured area approved by the Owner as "NON CONFORMING MATERIALS AREA" to ensure that defective or nonconforming materials are not incorporated into or used on the project
 2. Materials or products shall not be removed from the designated area until they are deemed by the Architect to be in compliance, or until they are modified or fixed to

meet the project specifications, or until they are removed from the jobsite for the purposes of disposal or shipment back to the manufacturer.

1.10 CONTRACTORS TESTING AGENCY

- A. Qualifications: At Contractor's expense, provide an independent testing laboratory nationally recognized according to 29 CFR 1910.7 and accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP,) or other independent agency with the experience and capability to conduct testing and inspecting indicated, documented according to ASTM E329; with additional qualifications specified in individual Sections; and, where required, that is acceptable to authorities having jurisdiction.
- B. Testing Agency shall cooperate with Architect, **[Construction Manager,]** Owner's Project Inspector, and Contractor in performance of duties.
- C. Testing Agency shall provide qualified personnel to perform required tests and inspections.
- D. Testing Agency shall not be authorized to release, revoke, alter, or increase the Contract Document requirements, approve or accept any portion of the Work, or perform any duties of Contractor.

1.11 TESTS AND INSPECTIONS

- A. Preconstruction Testing: Where preconstruction testing is specified to verify performance requirements, comply with the following as applicable:
 - 1. Contractor Responsibilities:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project unless approved by Architect in writing.
- B. Tests and Inspections indicated in individual Specification Sections shall be conducted by a qualified Testing Agency. The responsibilities of the Testing Agency shall be as follows:

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1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect, Owner's Project Inspector, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submit a certified written report of each test, inspection, and similar quality-control service to Architect and Owner's Project Inspector with copy to Contractor and to DSA.
 4. Submit a final report of tests and inspections at Substantial Completion which includes a list of unresolved deficiencies.
 5. Interpret tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retest and reinspect corrected work.
- C. Monitoring and Documentation: Contractor shall maintain testing and inspection reports including log of approved and rejected results as specified in Part 3.
1. Include work Architect has indicated as nonconforming or defective.
 2. Indicate corrective actions taken to bring nonconforming work into compliance with requirements.
 3. Comply with requirements of the California Division of the State Architect (DSA).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 NOTIFICATIONS

- A. Contractor shall provide the following notifications;
1. Owner's Project Inspector writing:
 - a. 24 hours in advance of starting new Work
 - b. 24 hours in advance of each test or inspection
 2. 48 hours' prior notice, minimum, to the Testing Agency for required tests and inspections.

3.2 TEST AND INSPECTION FIELD BINDER

- A. Contractor shall maintain in the Field Office a Test and Inspection Field Binder that includes a hard copy of the following documents:
1. Approved Quality Control Plan.
 2. Specification Sections that apply to the respective portions of work.
 3. RFI's, CCD's or other approved document that changes the work.

4. Manufacturer's Installation Instructions (MII).
5. Specific details of the Work as requested by the Inspector.
6. Test and Inspection Log.

3.3 TEST AND INSPECTION LOG

- A. Prepare and maintain a record of tests and inspections using an electronic spreadsheet.
- B. Include the following information:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. List pertinent detail/sheet number.
 4. List pertinent Specification Section.
 5. Attach manufacturer's installation inspections if applicable.
 6. List and attach RFI's, ASI's or CCD's affecting the Work.
 7. Date Inspector verified work is acceptable.
- C. Final record for each test and inspection shall be submitted on Contractors letterhead and include the name of the responsible person to verify Work was in accordance with the approved Contract Documents.

3.4 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, Contractor shall require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment as applicable, and to make appropriate recommendations. Contractor is responsible for proper notification of manufacturer's representative before installation of applicable work and for obtaining necessary inspection certificate stating that installation was observed and approved.
- B. Product Performance Verification: The supplier of products specified based on performance criteria shall, at the request of the Agency, inspect the installed product and certify conformance of the product to specified criteria under the installed conditions.
- C. Manufacturer's representative shall submit written report to the Architect listing observations and recommendations.

3.5 TOLERANCES - GENERAL

- A. Monitor tolerance control of installed products or portions to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

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3.6 DIMENSIONING AND TOLERANCES FOR ACCESSIBILITY

- A. While it is recognized that construction practices generally permit a level of reasonable dimensional tolerance, the installation of items subject to compliance with the Americans with Disabilities Act Accessibility Guidelines and Chapter 11B of the California Building Code, typically does not allow such tolerances. Therefore, these dimensions are to be considered absolute and will be strictly enforced. Items found to be out of tolerance may require modification and/or replacement at Contractor's expense.

3.7 REPAIR AND PROTECTION

- A. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes.
 - 2. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 7329, Cutting and Patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

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Last Updated: August 28, 2020

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for Testing Laboratory.
 - 2. Contractor's responsibilities for facilitation of Testing and Inspections.

1.2 RELATED SECTIONS AND DOCUMENTS

- A. Geologic Hazards & Soils Report.
- B. DSA 103 - Structural Test & Inspections List.
- C. Section 13 3423, Relocatable Buildings.
- D. Division 23, Mechanical Work - Testing, adjusting, and balancing of systems.
- E. Section 31 0000, Earthwork.
- F. Individual Specification Sections: Inspections and tests required, and standards for testing.

1.3 REFERENCES

- A. California Administrative Code (CAC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).

1.4 SELECTION AND PAYMENT

- A. Testing laboratory shall be approved by both the Architect and the Division of the State Architect.
- B. Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing. Retesting costs for failed tests will be the Contractors responsibility and will be back-charged against the contract.
- C. Under provisions for Relocatable Building construction, Owner limits his exposure to in-plant inspection and testing costs. Refer to other Specification Sections related to such specific construction.
- D. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

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1.5 LABORATORY REPORTS

- A. After each inspection and test, promptly submit two copies of laboratory report to Owner, Architect, Contractor and DSA.
- B. Include:
 - 1. Date of issue,
 - 2. DSA Application and File numbers,
 - 3. Project title and number,
 - 4. Name of inspector,
 - 5. Date and time of sampling or inspection,
 - 6. Identification of product and Specification Section,
 - 7. Location in the Project,
 - 8. Type of inspection or test,
 - 9. Date of test,
 - 10. Results of test,
 - 11. Conformance with Contract Documents.
- C. When requested by Architect, provide interpretation of test results.

1.6 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop the work.

1.7 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs. Allow reasonable time for review and testing.
- B. Arrange for, and coordinate with, laboratory for all required testing and inspection. Provide adequate notice, in advance, for proper scheduling and processing of testing. The Inspector will not be responsible for scheduling or arranging for testing and inspection services.
- C. Cooperate with laboratory personnel, and provide access to the work and to manufacturer's facilities.
- D. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at the source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.

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- E. Notify Architect, Inspector, Structural Engineer (when applicable) and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

END OF SECTION

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Last Updated: December 16, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Included: Except as otherwise specified, temporary facilities and controls required for performance of the Contract including, but not necessarily limited to:
 - 1. Field offices.
 - 2. Temporary utilities.
 - 3. Sanitary facilities.
 - 4. Construction equipment.
 - 5. Enclosures, fencing and barricades.
 - 6. Temporary signs.
 - 7. Site access and parking.
 - 8. Temporary controls.
 - 9. Winterization.
 - 10. Fire alarm, intrusion alarm and fire sprinkler systems.
 - 11. Existing conditions.

1.2 RELATED REQUIREMENTS

- A. Section 01 7419, Construction Waste Management and Disposal.
- B. Section 01 7700, Closeout Procedures; final cleaning.
- C. Permanent Utilities: As specified under other Specification Sections.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. General:
 - 1. Temporary facilities and controls shall be approved by local, state and federal authorities and regulatory agencies having jurisdiction, including insurance companies, with regard to safety precautions, operation and fire hazard.
 - 2. Contractor shall contact local authorities prior to start of work to coordinate local requirements.
- B. Comply with applicable standards referenced in Section 01 4216, Definitions and Standards.
- C. Contractor shall:
 - 1. Take suitable steps to ensure that public utilities encountered in connection with the Work will not be damaged.

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2. Send notices, make necessary arrangements and provide services required for the care of gas mains, water pipes, sewer pipes, conduits, cables, and other equipment or property.
3. Arrange with utility companies for fees required to move or remove their meters, poles, cables, guy wires, or equipment in or set under the property which will interfere with the construction work or which will not be required in the new construction.

1.4 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect and maintain temporary facilities and controls in proper and safe condition throughout progress of work.
- B. Replacements: In event of loss or damage, immediately make necessary repairs and replacements; as approved by Architect at no additional cost to Owner.

PART 2 - TEMPORARY FACILITIES AND CONTROLS

2.1 MATERIALS

- A. General: Materials may be new or used but shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall not violate requirements of applicable codes and standards.
- B. Tools, extension cords, and electrical equipment shall conform to Underwriters' Laboratory standards and OSHA requirements and shall be in proper working order to preclude hazard to occupants and premises.

2.2 FIELD OFFICES - GENERAL

- A. Minimum Requirements: Provide the facilities specified.
- B. Provide adequate measures to secure Field Office contents from theft that may include, but are not limited to, alarms, and lock guards.
- C. Contractor shall comply with City Ordinances and requirements regarding but not limited to the number and location of all temporary trailers, offices, and equipment. Contractor shall apply and pay for all required permits.
- D. Office and equipment shall remain property of Contractor and shall be removed by Contractor upon completion of work.
- E. Utilities: Provide power for lighting and equipment, and make provisions for adequate heating and cooling.
- F. Contractor shall provide paper, and service and maintenance contract, for dedicated copiers and multi-function machines.
- G. Contractor shall arrange with the telephone utility and provide and pay for specified temporary telephone service in the Architect's and Inspector's Field Office.

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1. Maintain service for the duration of operations under this Contract.
- H. Contractor shall provide for the storage of tools and equipment.
- I. Mobile trailers complying with the specified Field Office requirements are acceptable.
- J. Field offices are subject to approval by Owner and Architect.

2.3 CONTRACTOR'S FIELD OFFICE

- A. A space within the existing Buildings will be designated by the Owner for use by the Contractor as a field office.
- B. Furnish and install a temporary Contractor's Field Office for use by the Contractor's superintendent, complete with meeting space, drinking water, plan table, lighting, adequate storage facilities, and telephone and duplication service as specified.
- C. Furnishings:
 1. One (1) 36" x 120" conference table.
 2. Ten (10) folding chairs for use as needed.
 3. One (1) 36" x 144" plan table.
 4. One (1) plan rack with plan capacity appropriate for the size of project.
 5. One hot/cold bottled water dispenser with maintenance for life of contract.
- D. Temporary Telephone and Internet Service: Provide the following minimum service.
 1. One direct-line voice telephone.
 2. One direct-line for receiving facsimile transmissions to the multi-function machine specified below. Automatic voice/fax switching is acceptable.
 3. Direct internet access with service capable of sending and receiving large files.
 4. Minimum downstream Speed 50.0 Mbps and Upstream Speed 25 Mbps,
- E. Duplication: Provide the following minimum electronics.
 1. Multi-Function Copy/Scanner/Facsimile (FAX) Machine:
 - a. Type: Color laser.
 - b. Auto feed with collating capabilities.
 - c. Paper Sizes: 8-1/2" x 11" and 11" x 17".
 2. Network System: 801.11g wireless router with 4 Ethernet ports.
 3. Cables and Wiring: All necessary cables and wiring to connect the above components.
 4. Provide hardware and/or software support for items above.
- F. Provide additional facilities as agreed upon by Owner and Contractor.

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2.4 TEMPORARY UTILITIES

- A. General: Provide water, electricity, gas, fire protection and other specified utility services required during construction and extend temporary service lines to construction areas to allow use by all trades and subcontractors.
- B. Telephone:
 - 1. In addition to requirements for phones in Field Offices, Contractor and its Superintendent shall have a cell phone for communication with the Architect and Owner when at the Project site.
- C. Temporary Water:
 - 1. Owner will provide source and pay for water for construction purposes from existing available source(s) on site. This does not include use of hydrants or off-site sources. If necessary provide and pay for these services.
 - 2. Provide temporary connections to source and sufficient hose or pipe to carry water to every required part of construction.
 - 3. Drinking Water Facilities: Provide clean, sanitary and adequate drinking water.
- D. Temporary Electrical Facilities:
 - 1. Electrical Service: Provide such temporary electrical power and facilities as necessary to supply lighting for work operations and power for portable power driven tools and for testing.
 - 2. Owner will provide temporary power free of charge from existing outlets. If existing sources are insufficient, provide and pay for temporary service from off-site.
 - 3. Construction Requirements: Construct and maintain all temporary electrical facilities in accordance with division of Industrial Safety "Electrical Safety Orders" (ESO), Public Utilities Commission "Rules for Overhead Line Construction" (G.O. 95), and requirements of equipment used for these facilities shall be in good and safe condition, but need not be new.
- E. Temporary Heat and Ventilation:
 - 1. Provide heat and ventilation to protect work and materials and to keep humidity down to extent required to prevent corrosion of metal and to prevent dampness or mildew which is potentially damaging to materials and finishes. In addition, provide heat and ventilation prior to and during specific work operations, as follows
 - a. Provide sufficient heat to produce temperature of not less than 65 degrees F for 7 days prior to placing of interior finish materials and throughout application of drywall, painting and laying of resilient flooring materials.
 - b. Provide sufficient heat to maintain temperature of not less than 60 degrees after finishing trades are complete and until final acceptance or occupancy by Owner.
 - 2. Fuel, equipment and method of heating and ventilating shall be approved by Architect.

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F. Trash Removal:

1. Store trash or rubbish resulting from construction within the Contract work area.
2. Provide the necessary on-site containers for the collection of recycling materials, waste materials and debris.
3. Remove recycling materials, waste materials and debris from the site regularly and dispose of at recycling centers or legal disposal sites.
4. Keep the work area clean at all times. Increase frequency of trash removal when requested by the Owner to conform to this requirement.
5. Waste material and debris shall not be buried or burned at the site.
6. See additional requirement in Section 01 7419, Construction Waste Management and Disposal.

2.5 SANITARY FACILITIES

- A. Toilet Facilities: Provide sufficient suitably enclosed chemical toilets with urinal for use workers on project.
1. Toilets shall be in place at the time work starts and maintained until the permanent toilet facilities are in operation if approved for use by the Owner.
 2. Temporary toilets shall be of the chemical type.
 3. The number and maintenance of temporary toilets shall meet the requirements of State and local health regulations and ordinances.
 4. Locate on the site so as not to be visually offensive and in locations acceptable to the Owner.
 5. Sanitary waste from the portable toilets shall be collected as required but not more than weekly.
- B. Washing Facilities: Provide properly mounted and adequate wash sinks connected to water supply; in location as approved by Architect.

2.6 CONSTRUCTION AIDS

- A. General: Erect, equip, operate, and maintain all construction equipment in strict accordance with applicable statutes, laws, ordinances, rules, and regulations of authorities having jurisdiction; including insurance companies, with regard to safety, operation and fire hazard.
- B. Provide and maintain scaffolding, staging, runways and similar equipment, as needed. Coordinate use and furnishing with subcontractors.
- C. Provide and maintain hoists and construction elevators, including elevators for hoisting workers; complete with operators, power and signals, as necessary for operation. Comply with the following:
1. California Title 8, State Elevator Safety Order 3041c, and other applicable state and local codes.

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2. "American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks," ANSI A17.1.
3. California Elevator Safety Construction Code.

2.7 ENCLOSURES, FENCING AND BARRICADES

- A. General: Provide and maintain barricades, fencing, shoring, pedestrian walkways including attached lights, other lights, and other safety precautions to properly guard against personal injury and property damage as prescribed by authority having jurisdiction; including insurance companies.
- B. Attention is directed to Safety Orders issued by State of California, Division of Industrial Safety. Contractor shall obtain copies of such Safety Orders as are applicable to type of work to be performed, shall be governed by requirements thereof in all construction operations, and shall fully inform subcontractors and material suppliers as to the requirements of applicable Safety Orders.
- C. Contractor's Corporation Yard: Locate where shown or agreed on with Owner and Architect. Enclose with fence and gates as required for security, and as approved.
- D. Provide and maintain 6 foot high temporary fencing around entire work area to keep unauthorized personnel from accessing the area. Protect work in place from damage, including fields, roads, landscaping, and other existing site improvements to remain. No work is allowed outside the designated construction boundary.
- E. The Architect, the Owner, and field inspectors are not hired to review or approve safety procedures followed by the Contractor.

2.8 TEMPORARY SIGNS

- A. Signs or advertising are not permitted, except Contractor's name may be placed on his field office and equipment, unless otherwise approved by the architect.

2.9 SITE ACCESS AND PARKING

- A. Parking: On-site parking after occupancy may be limited or may not be permitted due to limited existing conditions. Check with District office to ascertain parking availability and do not park on-site if not permitted.
- B. Entrance to Work Site: Contractor and his employees shall use certain access roads or entrance ways as indicated on Drawings or as agreed to by Architect and Owner. Access shall not interfere with on-going operations, if any. Maintain these roads in satisfactory condition during the Contract time, and repair damages attributable to work of this project at intervals as needed. At completion of Contract, roads and entrance ways shall be left in condition at least equal to that existing at start of Contract, except as may be otherwise required by Contract Documents.
- C. Temporary access roads are to be provided by and completely removed by the Contractor upon completion of work. Place material such as base rock to provide and maintain safe access to temporary facilities, temporary parking and all areas of work

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required for continuing operations during winter months so that work may proceed in accordance with project schedule. Contractor is to restore these areas to condition at least equal to that at start of Contract or improve as required in the Contract Documents. All traffic is restricted to these access roads and the designated construction boundary.

- D. Site Storage and Work Areas: Owner will allocate available on-site storage and work areas to Contractor, subject to change as may be necessary by job progress, such as site development or other intervening work. If necessary, Contractor shall obtain off-site facilities for storage at his expense. No storage will be allowed beyond the designated construction boundary, or within designated Fire Lane.
- E. Regulations: Observe and comply with rules and regulations in effect at occupied campuses or other facilities, including, but not restricted to, parking and traffic regulations, security restrictions, and hours of access.
- F. Use of public Sidewalks and Streets (if applicable): Make arrangements with public authorities for temporary use of streets and sidewalks for offices, shops, storage, etc.. Abide by rules, regulations, and ordinances, obtain permits, and pay fees therefor.

2.10 TEMPORARY CONTROLS

- A. Debris Control: Keep work and storage areas clean and free of debris. Dispose of debris off premises, as it accumulates. Pay all fees required for use of public dumps. Burning on premises is prohibited.
- B. Dust Controls:
 - 1. Indoor Operations: Control dust resulting from indoor construction operations by localizing it to greatest practicable extent using temporary partitions, curtains, or other means which will prevent spread of dust beyond immediate work area. Duct openings and other openings communicating with other parts of building shall have effective temporary closures.
 - 2. Outdoor Operations: Use water wagons or spray from hoses to control dust created by outdoor work operations. Comply with all local and state dust control ordinances.
- C. Dewatering Facilities: Provide and maintain dewatering and pumping facilities to keep site reasonably dry, and to protect materials and installed work from water damage until dewatering is no longer required. Dewatering shall also include dewatering of trenches and footings due to surface run-off or sub-surface drainage facilities encountered, interrupted or damaged. Contractor is responsible for providing proper drainage and conditions at utility trenches, footing excavations or any other excavation as necessary for completing backfilling and compaction operations.
- D. Temporary Shoring: Provide all necessary shoring at trenches or other excavations as required to stabilize the trench or excavation walls. Shoring shall be provided in strict accordance with applicable statutes, laws, ordinances, rules, and regulations of authorities having jurisdiction

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- E. Security: Contractor is responsible for security of areas of its work during entire time of Contract. Make good all damages to the work and loss of materials due to vandalism or theft, within this responsibility. This includes damages due to construction activities caused to existing facilities.
- F. Contractor may wish to provide a security force at its expense. The Owner will not provide any monitoring for security purposes.
- G. Use and Storage of Hazardous or Flammable Materials:
 - 1. Use and store hazardous or flammable chemicals, liquids, or gases brought into the Project site in approved containers, conforming to local, state, and national fire codes.
 - 2. Use hazardous materials in a manner that will prevent their accidental release into other areas.
 - 3. Do not discard hazardous materials into the jobsite waste-disposal facilities.
 - 4. Remove empty containers from the premises immediately, and disposed of in a legal manner.
- H. Welding: There shall be at the jobsite adequate shields, guards, or covering placed so as to protect adjacent persons or property during the progress of work requiring welding and cutting equipment including heat, flame, or spark-producing devices.

2.11 FIRE ALARM, INTRUSION ALARM AND FIRE SPRINKLER SYSTEMS

- A. Existing Systems:
 - 1. Prior to start of demolition, the Contractor shall fully test the fire and intrusion alarms systems in the presence of district personnel to determine the working status of the systems. The test results shall be coordinated with the Owner's Project Inspector, documented and provided to the Owner and Architect.
 - 2. During construction, the Contractor shall protect and maintain the fire and intrusion alarm systems and the fire sprinkler protection systems of the existing and completed buildings. Failure to provide such protection and maintenance shall result in the Contractor assuming full responsibility for all existing and new unprotected buildings and property - whether a part of the Contract or not.
- B. Fire Protection During Construction:
 - 1. General: Comply with NFPA 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations" and any additional temporary fire protection requirements of Owner's Insurance Representative and governing authorities.
 - 2. During demolition and construction phases, the Contractor shall provide fire safety precautions as described in and required by the California Fire Code, Chapter 33 – Fire Safety during Construction and Demolition. Safety measures include but are not limited to maintaining fire department access, cutting and welding precautions and maintaining water supplies for firefighting purposes.
 - 3. In the event the Contractor discovers utilities not identified in the Contract Drawings or specifications, the Contractor shall immediately notify the Architect

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and the utility owner by the most expeditious means available and later confirm in writing.

4. Existing building utilities shall not be interrupted during normal operating hours.
5. Fire Extinguishers:
 - a. During the progress of work, there shall be at the jobsite an adequate number and type of fire extinguishers accessible for use.
 - b. Provide Type A extinguishers at locations of low-potential hazard for either electrical or grease-oil-flammable liquids fires; provide Type ABC dry chemical extinguishers at other locations; comply with recommendations of NFPA No. 10.
 - c. Post warning and quick-instructions at each extinguisher location, and instruct personnel at Project site, at time of their first arrival, on proper use of extinguishers and other available facilities at Project site.
6. Provide temporary, battery operated, heat detectors until permanent detection and alarm system is activated. Locate based on area layout including separation of spaces.

C. Smoking:

1. Contractor shall prohibit smoking in all areas of the Project and shall use due diligence to see that such prohibition is enforced.
2. No Smoking signs shall be furnished and posted in accordance with governing fire regulations.

2.12 EXISTING CONDITIONS

- A. Before commencement of work on the site, take digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
- B. Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as cracking or other damage caused by site preparation, earthwork, and building construction operations.
- C. Submit digital file and prints as specified for periodic construction photographs.
- D. Submit before Work begins.

PART 3 - EXECUTION

3.1 USE OF PERMANENT SYSTEMS FOR CONSTRUCTION PURPOSES

- A. Obtain Owner's prior written authorization of use of permanent systems. Authorization will indicate:
 1. Reason for use.
 2. Condition of use.

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3. Which parts of system may be used.
4. Disconnection from source, restoration, and cleaning of system.

3.2 MAINTENANCE AND REMOVAL

- A. Maintain all temporary facilities and controls as long as needed for safe and proper completion of Work; remove all such temporary facilities and controls as rapidly as progress of Work will permit.
- B. Non-compliance with requirements within this Section may result in payment being withheld and/or deductive change orders for lack of proper facilities and controls. If necessary, the Owner will provide such facilities and controls required and back-charge the Contractor.

3.3 ADJUSTING

- A. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
- B. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
- C. Restore existing facilities used for temporary services to specified or to original condition.

3.4 CLEAN UP

- A. Contractor shall be responsible for controlling, containing and cleaning up of all construction debris throughout construction period.
- B. Full compensation for cleanup shall be included in the Contract. No separate compensation will be allowed for work pertaining to cleanup or disposal of material.

END OF SECTION

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Last Updated: November 13, 2018

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: VOC restrictions for product categories listed below under Article "DEFINITIONS" and in compliance with the following.
 - 1. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code.
 - 2. Local Agency, City of Lodi.
- B. Products of each category that are installed in the project must comply; applicable laws and ordinances do not allow for partial compliance.
- C. Listing of a product in these Specifications shall not be construed as a solicitation or requirement to use any product or combination of products in violation of the requirements of South Coast Air Quality Management District Rule No.1168, as described in Rule 1168(g).
 - 1. If a listed product does not meet the requirements of this rule, request approval for use of an alternate product by the same or another manufacturer meeting the requirements of this rule.
 - 2. Do not use products which do not meet the requirements of this rule.

1.2 RELATED REQUIREMENTS

- A. Divisions 01 through 33 contain related requirements specific to the work of each of these Sections. Requirements may or may not include reference to this Section.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.

1.3 REFERENCES

- A. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.
- C. CRI (GLCC) - Green Label Testing Program - Approved Product Categories for Carpet Cushion; Carpet and Rug Institute; current edition.
- D. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; current edition.
- E. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.
- F. GreenSeal GS-36 - Commercial Adhesives; Green Seal, Inc.

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- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.
- H. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scscertified.com.

1.4 DEFINITIONS

- A. VOC-Restricted Products: Products of each of the following categories when installed or applied on-site:
 - 1. Adhesives, sealants, and sealer coatings, regardless of specification Section or Division.
 - 2. Paints and coatings.
 - 3. Carpet and resilient flooring.
 - 4. Composite wood products; plywood, particleboard, wood fiberboard.
- B. Adhesives: Gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- C. Sealants: Gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.5 SUBMITTAL REQUIREMENTS

- A. Product Data: For each VOC-restricted product used in the project, submit product data showing compliance, except when another type of evidence of compliance is required.
- B. Verification of Compliance: Submit for each different product in each applicable category.
 - 1. Identify evidence submittals with the words "CALGreen VOC Compliance Report".
- C. Installer Certifications for Accessory Materials:
 - 1. Require each installer of any type of product, not just the products for which VOC restrictions are specified, to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of their products, or 2) that such products used comply with these requirements.
 - 2. Use the form following at the end of Part 3 in this Section for Installer certifications.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this Section.

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PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

1. Provide products conforming to local, State and Federal government requirements limiting the amount of volatile organic compounds contained in the product, for its intended application. If specified product exceeds current requirement, provide conforming product at no additional cost.
2. Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No.1168 and less where required by code.
3. Products are specified in multiple Sections throughout these Specifications.

B. Composite Wood Products: Comply with CALGreen Section 5.504 and Table 5.504.4.5 formaldehyde limits for hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior and exterior of the building.

1. Verification of Compliance: Acceptable types are:
 - a. Certification by manufacturer that product complies with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Chain of custody certifications.
 - d. Product labeled and invoiced as meeting the Composite Wood Products regulation (CCR, Title 17, Section 93120, et seq.).
 - e. Products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, or European 636 3S standards.
 - f. Other method acceptable to enforcing agency.

Table 5.504.4.5 FORMALDEHYDE LIMITS	
Maximum Formaldehyde Emissions in Parts per Million	
Product	Current Limit
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard ¹	0.13
Note 1: Thin medium density fiberboard has a maximum thickness of 5/16 inch (8 mm).	

C. Insulation: Comply with CALGreen Section 5.504.4.8.2 formaldehyde limits for insulation.

1. Verification of Compliance: Documentation from manufacturer verifying thermal insulation materials meet the pollutant emission limits of one of the following.

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- a. The VOC-emission limits defined in 2014 CACHPS criteria and listed on its High Performance Products Database.
 - b. California Department of Public Health 2010 Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as Specification 01350.)
- D. Adhesives, Including Carpet and Cushion Adhesives: Comply with CALGreen Section 5.504 and Table 5.504.4.1.
1. Verification of Compliance: Acceptable types are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
 2. Aerosol Adhesives: Comply with Table 5.504.4.1 of CalGreen Section 5.504, and California Code of Regulations Title 17, Section 94507.
 - a. Verification of Compliance: Acceptable types are:
 - 1) Current GreenSeal Certification.
 - 2) Report of laboratory testing performed in accordance with GreenSeal GS-36 requirements.
 - 3) Published product data showing compliance with requirements.
 3. Products used shall comply with the following limits.

Table 5.504.4.1 ADHESIVE VOC LIMIT	
Architectural Applications	Current VOC Limit
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesive	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100
Single Ply Roof Membrane Adhesives	250
Other adhesives not specifically listed	250
VOC Limits and Effective Dates**	
Specialty Applications	Current VOC Limit
PVC Welding	510
CPVC Welding	490
ABS Welding	325

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Table 5.504.4.1 ADHESIVE VOC LIMIT	
Plastic Cement Welding	250
Adhesive Primer for Plastic	550
Contact Adhesive	80
Special Purpose Contact Adhesive	250
Structural Wood Member Adhesive	140
Top and Trim Adhesive	250
** The specified limits remain in effect unless revised limits are listed in the current governing edition of CalGreen.	
For adhesives, adhesive bonding primers, or any other primer not regulated by the above two Tables and applied to the following substrates, the following limits shall apply:	
Substrate Specific Applications	Current VOC Limit
Metal to Metal	30
Plastic Foams	50
Porous Material (except wood)	50
Wood	30
Fiberglass 80	80
Note: If an adhesive is used to bond dissimilar substrates together the adhesive with the highest VOC content shall be allowed.	

- E. Joint Sealants: Comply with CALGreen Section 5.504 and Table 5.504.4.2.
1. Verification of Compliance: Acceptable types are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
 2. Products used shall comply with the following limits.

Table 5.504.4.2 SEALANT VOC LIMIT	
Less Water and Less Exempt Compounds in Grams per Liter	
Sealant	Current VOC Limit
Architectural	250
Marine Deck	760
Non-Membrane Roof	300
Roadway	250
Single-Ply Roof Membrane	450
Other	420
Sealant Primers	Current VOC Limit
Architectural	
Non-Porous	250
Porous	775
Modified Bituminous	500

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Table 5.504.4.2 SEALANT VOC LIMIT	
Less Water and Less Exempt Compounds in Grams per Liter	
Marine Deck	760
Other	750
For low-solid adhesives or sealants the VOC limit is expressed in grams per liter of material; for all other adhesives and sealants, VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds.	

- F. Paints and Coatings: Comply with CALGreen Section 5.504 and Table 5.504.4.3 based on the California Air Resources Board, Architectural Coatings Suggested Control Measure.
1. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at Project site; or other method acceptable to authorities having jurisdiction.
 - a. Verification of Compliance: Acceptable types are:
 - 1) Report of laboratory testing performed in accordance with requirements.
 - 2) Published product data showing compliance with requirements.
 - 3) Certification by manufacturer that product complies with requirements.
 2. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. South Coast Air Quality Management District Rule No.1168.
 3. Aerosol Paints and Coatings: Comply with CALGreen 5.504.4.3.1 and, for projects in the jurisdiction of BAAQMD, comply with VOC by weight of product limits of regulation 8, Rule 49.
 4. Products used shall comply with the following limits.

Table 5.504.4.3 VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS	
(See Notes 2 & 3 below)	
Grams of VOC per Liter of Coating, less water and less exempt compounds	
Coating Category	Current VOC Limit 1/1/2012
Flat Coatings	50
Non-Flat Coatings	100
Non-Flat High Gloss Coatings	150
Specialty Coatings	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350

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Table 5.504.4.3 VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS (See Notes 2 & 3 below)	
Grams of VOC per Liter of Coating, less water and less exempt compounds	
Coating Category	Current VOC Limit 1/1/2012
Bond Breakers	350
Concrete Curing Compounds	350
Concrete / Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High-Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings (See Note 1 below)	120
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multicolor Coatings	250
Pretreatment Wash Primers	420
Primers, Sealers and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs:	
Clear	730
Opaque	550
Specialty Primers, Sealers and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc Rich Primers	340
Note 1: Grams of VOC per liter of coating including water and including exempt compounds	
Note 2: Not Applicable	

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Table 5.504.4.3 VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS (See Notes 2 & 3 below)	
Grams of VOC per Liter of Coating, less water and less exempt compounds	
Coating Category	Current VOC Limit 1/1/2012
Note 3: Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.	

5. Restricted Components: In addition to the specified VOC limits, paints and coatings shall not contain any of the following:
- Acrolein.
 - Acrylonitrile.
 - Antimony.
 - Benzene.
 - Butyl benzyl phthalate.
 - Cadmium.
 - Di (2-ethylhexyl) phthalate.
 - Di-n-butyl phthalate.
 - Di-n-octyl phthalate.
 - 1,2-dichlorobenzene.
 - Diethyl phthalate.
 - Dimethyl phthalate.
 - Ethylbenzene.
 - Formaldehyde.
 - Hexavalent chromium.
 - Isophorone.
 - Lead.
 - Mercury.
 - Methyl ethyl ketone.
 - Methyl isobutyl ketone.
 - Methylene chloride.
 - Naphthalene.
 - Toluene (methylbenzene).
 - 1,1,1-trichloroethane.
 - Vinyl chloride.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. Additional costs to restore indoor air quality, including fines by authorities, due to installation of non-compliant products shall be borne by Contractor.

3.2 CERTIFICATION FORM

- A. Use of this Form:
 - 1. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.
 - 2. Contractor is required to obtain and submit this Form from each installer of work on this project.
 - 3. For each product category listed, circle the correct words in brackets: either [HAS] or [HAS NOT].
 - 4. If these accessory materials have been used, attach to this form product data and MSDS sheet for each such product.

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ACCESSORY MATERIAL VOC CONTENT CERTIFICATION FORM

IDENTIFICATION:

Project Name: _____

Project No.: _____

Architect: _____

PRODUCT CERTIFICATION: I certify that the installation work of my firm on this project:

1. [HAS] [HAS NOT] required the use of any ADHESIVES.
2. [HAS] [HAS NOT] required the use of any JOINT SEALANTS.
3. [HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.
4. [HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.

Product data and MSDS sheets are attached.

CERTIFIED BY (Installer/Manufacturer/Supplier Firm):

Firm Name: _____

Print Name: _____

Signature: _____

Title: _____ (officer of company)

Date: _____

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END OF SECTION

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compound (voc) restrictions.docx
Last Updated: January 18, 2022*

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cutting and patching:
 - a. For construction that is defective, or as required to install incomplete work shown in the Contract Documents.
 - b. To extend work or restore existing construction to its original condition, unless otherwise specified or shown on the drawings.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 01 3516, Alteration Project Procedures.
- D. Section 02 4119, Selective Demolition.

1.3 REFERENCES

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

1.4 ADMINISTRATION REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

1.5 ACTION SUBMITTALS

- A. Manufacturer's Data: For products not included in the specifications, submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, and installation instructions.

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- B. Samples: As requested by the Architect.
- C. Request for Cutting and Patching:
 - 1. Submit a written request to Architect well in advance of executing any cutting or alteration which affects:
 - a. Work of the Owner or any separate contractor.
 - b. Structural value or integrity of any element of the Project.
 - c. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - d. Efficiency, operational life, maintenance or safety of operational elements.
 - e. Visual qualities of sight-exposed elements.
 - f. No cutting of structural elements is allowed unless shown on the Division of the State Architect's approved drawings
 - 2. Request shall include:
 - a. Project identification.
 - b. Description of affected work.
 - c. Necessity for cutting, alteration or excavation.
 - d. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
 - e. Description of proposed work:
 - 1) Scope of cutting, patching, alteration, or excavation.
 - 2) Trades who will execute the work.
 - 3) Products proposed to be used.
 - 4) Extent of refinishing to be done.
 - f. Alternatives to cutting and patching.
 - g. Cost proposal, when applicable.
 - h. Written permission of any separate contractor whose work will be affected.
- D. Should conditions of work or schedule indicate change of products from original installation, Contractor shall submit request for substitution.
- E. Submit written notice to Architect designating date and time work will be uncovered.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample of manufacturer's warranty, where applicable.
- B. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:

- a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
- b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
- c. Composite Wood: Evidence of compliance that products meet formaldehyde limits of current CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranties and Subcontractors' guarantees for products not included in the specifications.

1.8 QUALITY ASSURANCE

- A. Qualifications for Installers:
 - 1. General: As specified in the product specifications.
 - 2. Employ specially qualified installers or fabricators to perform cutting and patching for:
 - a. Weather-exposed or moisture-resistant elements.
 - b. Sight-exposed finished surfaces.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- D. 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.

1.9 FIELD CONDITIONS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

1.10 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturers' available fully executed written warranties for products not included in the specifications against defects in materials and workmanship

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:

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1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.
3. Composite wood products must meet current formaldehyde emission limits of CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.

2.2 MATERIALS

- A. Comply with these specifications, standards and manufacturer's recommendations for each specific product involved.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect conditions of Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performance of work.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
- B. Provide devices and methods to protect other portions of Project from damage.
- C. Provide protection from elements for that portion of Project which may be exposed by cutting and patching work, and maintain excavations free from water.

3.3 INSTALLATION

- A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs.
 1. Removal or cutting of concrete paving shall occur at adjacent expansion joint or control joint.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work, and in accordance with Section 31 2333, Trenching and Backfilling.
- C. Execute fitting and adjustment of products to provide finished installation to comply with specified products, functions, tolerances and finishes.

CUTTING AND PATCHING
SECTION 01 7329
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- D. Restore work which has been cut or removed; install new products to provide completed work in accord with requirements of Contract Documents.
- E. Fit work airtight to pipe, sleeves, ducts, conduit and other penetrations through surfaces.
- F. Refinish entire surfaces as necessary to provide even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish entire unit.

3.4 CLEANING AND ADJUSTING

- A. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- B. Upon completion of installation, thoroughly wash surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition.

3.5 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. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

END OF SECTION

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Last Updated: December 16, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Requirements and procedures for ensuring optimal diversion of construction waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.
 - 1. The Work of this Contract requires that a minimum of **[65%]** by weight of the construction and demolition materials generated in the Work is diverted from landfill disposal through a combination of re-use and recycling activities.
 - 2. CAL-Green: Alternate waste reduction methods developed in cooperation with local agencies if diversion or recycle facilities capable of compliance with CAL-Green requirements do not exist within the haul boundary of the jobsite (California Code of Regulations, Title 24, Part 11, 5.408).
 - 3. Requirements for submittal of Contractor's Construction Waste and Recycling Plan prior to the commencement of the Work.
 - 4. Contractor's quantitative reports for construction waste materials as a condition of approval of progress payments submitted to the Architect.

1.2 RELATED REQUIREMENTS

- A. Section 01 3516, Alteration Project Procedures.
- B. Section 01 5000, Temporary Facilities & Controls.
- C. Section 01 7329, Cutting and Patching.
- D. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- E. Section 02 4119, Selective Demolition.

1.3 REFERENCES AND STANDARDS

- A. California Green Building Standards Code (CALGreen), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).

1.4 DEFINITIONS

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from the California Integrated Waste Management Board (CIWMB) and is regulated by the Enforcement Agency (EA).
- B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous as defined in California Code of Regulations, Title 22, Section 66261.3 et seq.

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
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This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The debris may be commingled with rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.

- C. C&D Recycling Center: A facility that receives only construction and demolition debris material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than 10% of the amount separated for reuse by weight.
- D. Disposal: Final deposition of construction and demolition or inert debris into land, including stockpiling onto land of construction and demolition debris that has not been sorted for further processing or resale, if such stockpiling is for a period of time greater than 30 days; and construction and demolition debris that has been sorted for further processing or resale, if such stockpiling is for a period of time greater than one year, or stockpiling onto land of inert debris that is for a period of time greater than one year.
- E. Enforcement Agency (EA): Enforcement agency is the authority having jurisdiction within the Project location.
- F. Inert Disposal Facility or Inert Waste Landfill: A disposal facility that accepts only inert waste such as soil and rock, fully cured asphalt paving, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, and ceramics, for land disposal.
- G. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- H. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.
- I. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- J. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- K. Separated for Reuse. Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream for the purpose of additional sorting or processing those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace, and includes materials that have been "source separated".
- L. Solid Waste: All putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
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hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.

- M. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation, for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.
- N. Waste Hauler: A company that possesses a valid permit from the local waste management authority having jurisdiction to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

1.6 ACTION SUBMITTALS

- A. Contractor's Construction Waste and Recycling Plan:
 - 1. Review Contract Documents and estimate the types and quantities of materials under the Work that are anticipated to be feasible for on-site processing, source separation for re-use or recycling. Indicate the procedures that will be implemented in this program to effect jobsite source separation, such as, identifying a convenient location where dumpsters would be located, putting signage to identify materials to be placed in dumpsters, etc.
 - 2. Prior to commencing the Work, submit Contractor's Construction Waste and Recycling Plan. Submit in format provided with this specification section. The Plan must include, but is not limited to the following:
 - a. Contractor's name and project identification information;
 - b. Procedures to be used;
 - c. Materials to be re-used and recycled;
 - d. Estimated quantities of materials;
 - e. Names and locations of re-use and recycling facilities/sites;
 - f. Tonnage calculations that demonstrate that Contractor will re-use and recycle a minimum of 65% by weight of the construction waste materials generated by the Work.
 - 3. Contractor's Construction Waste and Recycling Plan must be approved by the Architect prior to the start of Work.

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
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4. Contractor's Construction Waste and Recycling Plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures

1.7 INFORMATIONAL SUBMITTALS

A. Contractor's Reuse, Recycling, and Disposal Report:

1. Submit Contractor's Reuse, Recycling, and Disposal Report on the form provided with this specification section with each Application & Certificate for Payment. Failure to submit the form and its supporting documentation will render the Application & Certificate for Payment incomplete and delay progress payments. If applicable, include manifests, weight tickets, receipts, and invoices specifically identifying the Project for re-used and recycled materials:
 - a. Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick).
 - b. Salvaging building materials or salvage items at an offsite salvage or reuse center (i.e. lighting, fixtures).
 - c. Recycling source separated materials on site (i.e. crushing asphalt/concrete for base course, or grinding for mulch).
 - d. Recycling source separated material at an offsite recycling center (i.e. scrap metal or green materials).
 - e. Use of material as Alternative Daily Cover (ADC) at landfills.
 - f. Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
 - g. Disposal at a landfill or transfer station (where no recycling takes place).
 - h. Other (describe).
2. Contractor's Reuse, Recycling, and Disposal Report must quantify all materials generated in the Work, disposed in Class III landfills, or diverted from disposal through recycling. Indicate zero (0) if there is no quantity to report for a type of material. As indicated on the form:
 - a. Report disposal or recycling either in tons or in cubic yards. If scales are available at disposal or recycling facility, report in tons; otherwise, report in cubic yards. Report in units for salvage items when no tonnage or cubic yard measurement is feasible.
 - b. Indicate locations to which materials are delivered for reuse, salvage, recycling, accepted as daily cover, inert backfill, or disposal in landfills or transfer stations.
 - c. Provide legible copies of weight tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.
 - 1) Indicate project title, project number, progress payment number, name of the company completing the Contractor's Report and compiling backup documentation, the printed name, signature, and daytime phone number of the person completing the form, the beginning and ending dates of the period covered on the Contractor's Report, and the date that the Contractor's Report is completed.

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
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3. Demonstrate compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green" 5.408.2, to the satisfaction of the enforcing agency.
 - a. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
 - b. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

PART 2 - PRODUCTS-NOT USED

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT PLAN

- A. Implement procedures for disposal of materials, as specified in Contractor's Construction Waste and Recycling Plan, which are not diverted for re-use, salvage or recycling.
 1. Identify materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale.
 2. Determine if materials will be sorted on-site or mixed.
 3. Identify diversion facilities where material collected will be taken.
 4. Specify that quantities of diverted material will be calculated by weight or volume, but not both.

3.2 SALVAGE, RE-USE, RECYCLING AND PROCEDURES

- A. Re-use, Salvage, and Recycling Facilities: As specified in Contractor's Construction Waste and Recycling Plan.
- B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor's Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.
 1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
 2. Source separate new construction, excavation and demolition materials including, but not limited to the following types.
 - a. Asphalt.
 - b. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
 - c. Drywall.
 - d. Green materials (i.e. tree trimmings and land clearing debris).

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- e. Metal (ferrous and non-ferrous).
 - f. Miscellaneous Construction Debris.
 - g. Paper or cardboard.
 - h. Reuse or Salvage Materials
 - i. Soils.
 - j. Wire and Cable.
 - k. Wood.
 - l. Other (describe)
3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source separated to a mixed materials recycling facility

3.3 DISPOSAL OPERATIONS AND WASTE HAULING

- A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
- B. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority having jurisdiction.
- C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials.
- D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
- E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

3.4 RE-USE AND DONATION OPTIONS

- A. Implement a re-use program to the greatest extent feasible. Options may include:
 - 1. California Materials Exchange (CAL-MAX) Program is sponsored by the California Integrated Waste Management Board. CAL-MAX is a free service provided by the California Integrated Waste Management Board, designed to help businesses find markets for materials that traditionally would be discarded. The premise of the CAL-MAX Program is that material discarded by one business may be a resource for another business. To obtain a current Materials Listings Catalog, call CAL-MAX/California Integrated Waste Management Board at (916) 255-2369 or send a FAX to (916) 255-2200. The CALMAX Catalog is available through the Internet Site at <http://www.ciwmb.ca.gov/calmax>.

3.5 REVENUE

- A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted in the Contract Documents

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END OF SECTION

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Last Updated: December 16, 2021

SECTION 01 7419A
CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN
(Submit After Award of Contract and Prior to Start of Work)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ()	Fax: ()	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	TO:

Reuse, Recycling or Disposal Processes To Be Used

Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:

- 01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
- 02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
- 03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
- 04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
- 05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
- 06 - Recycling material as Alternative Daily Cover at landfills
- 07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
- 08 - Disposal at a landfill or transfer station.
- 09 - Other (please describe) _____

Types of Material To Be Generated

Use these codes to indicate the types of material that will be generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris	R = Reuse/Salvage	W = Wood	O = Other (describe)	

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion			0	0	0	0

SECTION 01 7419A
CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN
Continued

SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.</i>						
Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				0	0	0

SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				0	0	0
b. Total Disposed				0	0	0
c. Total Generated				0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
	Tons	Cubic Yards	Other Wt.			
a. Materials Re-Used and Recycled	0					
b. Materials Disposed	0					
c. Total Materials Generated (a. + b. = c.)	0	0	0			
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!					

* Use tons only to calculate recycling percentages: $\text{Tons Reused/Recycled/Tons Generated} = \% \text{ Recycled}$

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

Notes:

1. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)

Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)

Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)

Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)

Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)

Drywall Scrap: .20

Wood Scrap: .16

SECTION 01 7419B
CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT
(Submit With Each Progress Payment)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ()	Fax: ()	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Period Covered:	From:	To:

Reuse, Recycling or Disposal Processes Used

Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:

01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
08 - Disposal at a landfill or transfer station.
09 - Other (please describe) _____

Types of Material Generated

Use these codes to indicate the types of material that were generated on the project

A = Asphalt C = Concrete M = Metals I = Mixed Inert G = Green Matls
D = Drywall P/C=Paper/Cardboard W/C = Wire/Cable S= Soils (Non Hazardous)
M/C = Miscellaneous Construction Debris R = Reuse/Salvage W = Wood O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling occurred.

Type of Material	Type of Activity	Facilities Used/Location	Total Truck Loads	Total Quantities		
(ex.) M	04	ABC Metals, Los Angeles	24	Tons	Cubic YD	Other Wt.
a. Total Diversion			0	0	0	0

SECTION 01 7419B
CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT
Continued

SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling occurred.</i>						
Type of Material	Type of Activity	Facilities Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				0	0	0

SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				0	0	0
b. Total Disposed				0	0	0
c. Total Generated				0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
	Tons	Cubic Yards	Other Wt.			
a. Materials Re-Used and Recycled	0					
b. Materials Disposed	0					
c. Total Materials Generated (a. + b. = c.)	0	0	0			
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!					

* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled

Contractor's Comments (<i>Provide any additional information pertinent to planned reuse, recycling, or disposal activities</i>):						

Notes:

- Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
 Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
 Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
 Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
 Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
 Drywall Scrap: .20
 Wood Scrap: .16

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for Contract closeout.
- B. These requirements supplement those included in the General Conditions and are subject to modification upon mutual agreement between the Architect, Owner, and Contractor.

1.2 FINAL CLEANING

- A. Immediately prior to completion and occupancy, remove marks, stains, fingerprints, dust, dirt and paint drippings resulting from work of this project, both interior and exterior including roofs, walls, floors, sidewalks, paving and other finished surfaces.
- B. Contractor shall engage the services of an independent, professional cleaning service to perform final cleaning after Contractor's final clean-up is completed.
- C. Materials:
 - 1. Use only those cleaning materials that will neither create hazards to health or property, damage surfaces, and are in compliance with Proposition 65.
 - 2. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
 - 3. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
 - 4. Use only environmentally acceptable "green" cleaning products.
- D. Wash tile, plumbing and other fixtures clean.
- E. Clean and polish hardware and other unpainted metals.
- F. Remove temporary labels, tags and paper covering.
- G. Glass, both interior and exterior, and mirrors shall be cleaned to the level expected by a professional window washer.

1.3 REQUIREMENTS PREPARATORY TO FINAL ACCEPTANCE

- A. Temporary facilities shall be removed from site.
- B. Plumbing, mechanical and electrical equipment shall operate quietly and free from vibration. Properly adjust, repair, balance, or replace equipment producing objectionable noise or vibration in occupied areas of building. Provide additional brackets, bracing, etc., to prevent objectionable noise or vibration. Systems shall operate without humming, surging, or rapid cycling.
- C. Operating instructions for equipment shall be properly mounted and posted.

CLOSEOUT PROCEDURES
SECTION 01 7700
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- D. Training: Provide training and orientation of Owner's operating staff in proper care and operation of equipment, systems and controls including:
 - 1. Resetting fire rated overhead coiling doors.
 - 2. Fire protection systems.
 - 3. HVAC equipment.
 - 4. Control systems.
 - 5. Signal systems.
 - 6. Telephone communication systems.
 - 7. Data systems.
 - 8. Fire alarm systems.
 - 9. Intrusion alarm systems.
 - 10. Other systems as required in the specifications or needed to properly instruct Owner's representatives.
 - 11. Three copies of certificate, signed by the Owner's representative, attesting to their having been instructed.
- E. The following shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 1. Completed Record Drawings signed by Contractor and Inspector.
 - 2. Maintenance and Operating instructions and manuals.
 - 3. Certifications completed and signed.
 - 4. Guarantees and warranties as specified and required by the General Conditions.
- F. Contractor's Final Verified Report and other Reports and Affidavits required by the local jurisdiction shall be submitted; originals and one copy.
- G. Extra Stock shall be delivered and acknowledged by the Owner in quantities specified.

1.4 PUNCH LIST

- A. Prior to Architect's punch list, Contractor shall prepare and address initial deficiencies list for all work. Upon completion, this list shall be sent to the Architect.
- B. Contractor shall notify Architect when Contractor, with concurrence of Inspector, feels project is complete enough for preparation of Architect's punch list.
- C. Architect will then notify appropriate consultants including civil, mechanical and electrical engineers, landscape architect, food service designer and others as needed, to make their inspections and prepare "punch lists". Consultant "punch lists" will be completed before Architect will make its "punch list".
- D. Architect will prepare a "punch list".
- E. Punch lists will be published within 14 days of Architect's walk through.

- F. Work on the punch list, except minor items as determined by the Architect, shall be completed prior to completion and occupancy.

1.5 FINAL ACCEPTANCE

- A. After requirements preparatory to Final Acceptance have been completed as hereinbefore specified, Contractor shall notify Architect to perform acceptance tour. Notice shall be given at least three days in advance of the time the acceptance tour is to be performed.
- B. Contractor or its principal superintendents authorized to act in behalf of Contractor, shall accompany Architect and Inspector on acceptance tour, as well as any principal subcontractors that Architect may request to be present.
- C. If work has been completed in accordance with Contract Documents, and no further corrective measures are required, Architect will recommend Final Acceptance to the Owner and initiate the filing of the Notice of Completion.
- D. If work has been substantially completed in accordance with Contract Documents, and only minor corrective measures are required, Architect will recommend that Owner conditionally accept Project and file Notice of Completion based upon Contractor's assurance that corrective measures will be completed within shortest practicable time period (but absolutely not later than 30 days).
- E. If work has not been substantially completed in accordance with Contract Documents, and several or many corrective measures are still required, Architect will recommend one or the other of the following:
 - 1. That Owner accept Project and file Notice of Completion only upon receiving from Contractor a Cashier's Check in amount sufficient to account for corrective measures still required, in the event that Owner had to have others complete the work.
 - 2. That Owner not accept project and not file Notice of Completion. Instead, based on information gathered from acceptance tour, Contractor will be required to complete all corrective measures and then call for another project acceptance tour following procedure outlined above.
- F. Should any corrective measures remain incomplete at time final payment is due, Contractor shall provide Owner with Money Order(s) or Cashier's Check in exchange for retention. Money Order(s) or Cashier's Check shall be in an amount one and one-half times the agreed estimated cost as determined by the Architect.
- G. Upon Final Acceptance of Project by Owner, Contractor shall submit his request for final payment, less retention. Retention payment will not be made by Owner until 35 days after board acceptance and filing of Notice of Completion with County Recorder, as specified in General Conditions.
- H. Retention payment will not be made until Contractor has filed the required final reports to the local jurisdiction with two original copies to the Architect.

CLOSEOUT PROCEDURES
SECTION 01 7700
3431006

1.6 CLOSEOUT CHECKLIST

- A. The following items are to be fully completed and/or submitted as a condition for final acceptance of the project (as applicable)
1. Specifications and Plans Review for Closeout
 2. Fire Alarm System Certification
 3. Megger Grounding Test Certificate
 4. Certificate of Compliance for Building Materials
 5. Contractor's Reuse, Recycling and Disposal Report
 6. Environmental Product Certification as required under Section 01 3543
 7. Indoor Air Quality Report (Section 01 3543)
 8. Certifications as required under Section 01 3300.
 9. Air Balance Report
 10. Operation & Maintenance Manuals
 11. Guarantees/Warranties
 12. Training
 13. Record Drawings
 14. Labels and name plates on all electrical panels
 15. Keys (from Contractor - properly labeled):
 - a. electrical panel keys
 - b. communication panel keys
 - c. all cabinet keys
 - d. t
 - e. extra door keys as required by specifications
 16. Punch List Items Completed
 17. Extra Stock of Specified Items, delivered to Owner (including documents)
 18. Back charges Resolved
 19. Removal of Stop Notices
 20. Contractor's Final Verified Reports (DSA 6-C)

END OF SECTION

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procedures.docx
Last Updated: July 13, 2018*

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for explicit warranties, guarantees, bonds, and service and maintenance contracts specified in the individual Sections and supplementing the requirements included in the General Conditions.
 - 2. Guarantee and warranty period inspections.
 - 3. Forms for Guarantees/Warranties.

1.2 RELATED REQUIREMENTS

- A. Section 01 3300, Submittal Procedures; additional requirements and submittal procedures for guarantees/warranties.

1.3 DEFINITIONS

- A. General: The following definitions apply to the language used in these Specifications.
- B. Warranty: A representation or affirmative covenant that the work will be performed in accordance with certain standards stated in the Contract, such as in "a good and workmanlike manner," and otherwise be free of defects and in conformity with the Contract Documents for the duration noted or, if a duration is not indicated, the statute of limitations period for contract breaches will constitute the time frame for enforcement.
- C. Guarantee: A provision of the warranty which becomes operative after completion of the work under the Contract and requires replacement of defective or non-conforming materials or equipment, or remedy improper workmanship, at the guarantors own cost and expense, for the duration noted under the General Conditions of the Contract or in the Specifications.
- D. Standard Product Guarantees/Warranties: Preprinted written documents published by individual manufacturers for particular products and specifically endorsed by the manufacturer to the Owner.
- E. Contractor Standard Guarantee: The Contractor's guarantee for the term included in the General Conditions.
- F. Subcontractor Standard Guarantee: A Subcontractor's guarantee period that coincides with the term of the Contractor's guarantee included in the General Conditions.
- G. Special Guarantees/Warranties: Written guarantees/warranties required by or incorporated in the Contract Documents to be provided by the Contractor or its Subcontractors to either extend time limits of the Standard Guarantees/Warranties included in the General Conditions or to provide greater rights for the Owner.

WARRANTIES
SECTION 01 7836
3431006

1.4 GENERAL REQUIREMENTS

- A. Guarantees/warranties between Contractor and manufacturers and between Contractor and suppliers shall not affect those issued to the Owner.
- B. Contractor shall not be held responsible for defects due to misuse, negligence, willful damage, improper maintenance, or accident caused by others nor shall it be responsible for damaged parts whose replacement is necessitated by failure of Owner's maintenance forces to properly clean and service them, provided that Contractor has furnished complete operating and maintenance instructions to Owner.
- C. By terms of each guarantee/warranty, unless otherwise specified or stipulated, also agree to remove and replace other work, as required, that has been connected to or superimposed on substrate material to be replaced.
- D. In addition to other requirements specified:
 - 1. Compile specified service and maintenance contracts.
 - 2. Coexecute submittals when specified.
 - 3. Review submittals to verify compliance with Contract Documents.
 - 4. Submit to Architect for review and transmittal to Owner.
- E. In case of items remaining incomplete after date of filing of the Notice of Completion, the guarantee/warranty period shall run from the date of acceptance of such items.
- F. Special guarantees/warranties applicable to definite parts of the Work and as specifically stipulated in the respective Sections of the Specifications or other Contract Documents shall be subject to the terms of this Section.
- G. If repairs or changes are required in connection with the work within a guarantee/warranty period, the Contractor shall, promptly upon receipt of notice from the Owner and without expense to the Owner, comply with the following:
 - 1. Correct defects and place in satisfactory condition the work covered by the respective guarantee/warranty.
 - 2. Repair, to the satisfaction of the Owner, damage to the Buildings and/or site that is the result of the cause for said repairs and changes.
 - 3. Repairs and corrective work shall be made to the satisfaction of the Owner including the equipment and contents of the Buildings and/or site disturbed during performance of the guarantee/warranty work.
- H. The Owner may, at its sole discretion, proceed with the correction work at Contractor's expense if Contractor does not proceed with the corrective work within a reasonable time fixed by a written notice from the Owner.
 - 1. As part of the corrective work, the Owner reserves the right to remove and store or dispose of defective equipment or material at Contractor's expense.
 - 2. If Contractor does not pay the costs of such removal and storage within ten days thereafter, the Owner may, upon ten additional days' written notice, sell such

WARRANTIES
SECTION 01 7836
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defective items and shall account for the net proceeds after deducting all the costs that should have been borne by the Contractor, including compensation for the Architect's additional services.

3. If the proceeds from the sale are insufficient to cover all amounts chargeable to Contractor, Contractor shall pay the difference to the Owner.
- I. If repairs or changes are required in connection with guarantee/warranty work and notice is given within the guarantee/warranty period, the warranty shall continue until the corrective work has been completed, regardless of the termination of the specified guarantee/warranty period.
- J. In case of work performed by subcontractors and where a special guarantee/warranty is required, guarantees/warranties addressed to and in favor of the Owner shall be secured from said subcontractors.
- K. No provision in the Contract Documents or in any special or general guarantee/warranty shall be held to limit, as to time or scope of liability, the Contractor's liability for defects or the liability of its sureties to less than the legal limit of liability under laws having jurisdiction.
- L. The delivery of any guarantees/warranties shall not relieve the Contractor from any obligation assumed under any other provision of the Contract Documents.
- M. The obligation of the Contractor under this Section shall survive the termination of the Contract.

1.5 SUBMITTAL REQUIREMENTS

- A. Assemble guarantees/warranties, bonds, and service and maintenance contracts executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Format:
 1. Size: 8-1/2-inch-by 11-inch sheets, punched for three-ring binder. Fold larger sheets to fit into binders.
 2. Binders: Commercial quality, three-ring, "View" type, with durable and cleanable plastic covers.
 3. Cover: Identify each packet with typed or printed title, "GUARANTEES/WARRANTIES," and list the title of Project and name of Contractor.
- C. Contents:
 1. Neatly typed, in orderly sequence.
 2. Provide complete information for each item including:
 - a. Product or work item.
 - b. Firm name with name of principal, address, and telephone number.
 - c. Beginning date and duration of warranty, bond, or service and maintenance contract.

WARRANTIES
SECTION 01 7836
3431006

3. Provide the following information for Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Circumstances that might affect the validity of guarantee/warranty or bond.
 4. Contractor's name, name of responsible principal, address, and telephone number.
- D. Refer to Section 01 3300, Submittal Procedures, for additional requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TIME OF SUBMITTALS

- A. Typical: Within 30 days after filing date of Notice of Completion.
- B. Equipment or component parts of equipment put into service during progress of construction; submit documents within 10 days after inspection and acceptance.
- C. Items of work, where acceptance is delayed materially beyond date of filing date of Notice of Completion; provide updated submittal within 14 days after acceptance, listing date of acceptance as start of guarantee/warranty period.

3.2 GUARANTEE PERIOD INSPECTIONS

- A. Contractor and subcontractors performing the construction work are required to guarantee workmanship and materials for the period noted in the Contract. Within a month of the end of such guarantee period, Contractor's agent shall prepare an inspection report indicating the condition of the Owner's facility and related common facility, itemizing the work to be completed, performed and/or corrected. Such guarantee period shall be continued in effect and extended until such time as Owner submits to Contractor written confirmation of the satisfactory completion of the itemized work, which confirmation shall be submitted within a reasonable period of time.

3.3 GUARANTEE/WARRANTY FORMS

- A. Contractor Standard Guarantee: Submit the following written Standard Guarantee/Warranty form for the overall Work against defects in materials and workmanship for the period of guarantee/warranty required under the Contract after the filing of the Notice of Completion (included with this section).
- B. Subcontractor Standard Guarantee: Submit the following written Standard Guarantee/Warranty form for Subcontracted Work against defects in materials and workmanship for the period of guarantee/warranty required under the Contract after the filing of the Notice of Completion (included with this section).
- C. Subcontractor Special or Extended Guarantee/Warranty: Contractor shall have its Subcontractor submit the following Special Extended Written Guarantee/Warranty, typed

WARRANTIES
SECTION 01 7836
3431006

on Subcontractor's letterhead, when required by a Specification Section for a period in excess of 2 years (included with this section).

END OF SECTION

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Last Updated: February 13, 2019

(Letterhead of Contractor)

STANDARD GUARANTEE / WARRANTY

for

Project Name

Contract No.

We hereby warrant that the Work we have provided under the above reference Contract has been completed in accordance with the Drawings, Specifications, and other Contract Documents.

Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within the period of 24 months from the date of filing of the Notice of Completion of the above named Project by the Board of Trustees of the School District, and we also agree to repair any and all damages resulting from such defects, without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with above-mentioned guarantee conditions within ten (10) day after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED (Contractor) _____

(Address)

(Printed Name of Authorized Representative)

Signature

(License Number)

(Date of Signing)

COUNTERSIGNED (Owner) _____

(Printed Name of Authorized Representative)

Signature

Date of Filing or Notice of Completion: _____

(Letterhead of Company)

SUBCONTRACTOR STANDARD GUARANTEE / WARRANTY

We hereby warrant that

which we have provided in _____

Name of Project _____

for

District

has been completed in accordance with Specification Section _____ and requirements of the Contract Documents.

Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within a period of 24 months from date of filing the Notice of Completion of the above-named Project by the Board of Trustees of the School District without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with above-mentioned guarantee conditions within ten (10) day after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED (Subcontractor)

(Signature)

(Company Name)

(Address)

(License Number)

(Date of Signing)

COUNTERSIGNED (General Contractor)

(Signature)

(Company Name)

(Address)

(License Number)

(Date of Signing)

(Letterhead of Company)

SPECIAL EXTENDED WRITTEN GUARANTEE / WARRANTY

We hereby warrant that _____

which we have provided in _____
Name of Project

for _____
District

has been completed in accordance with Specification Section _____ and requirements of the Contract Documents.

Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within a period of _____ year(s) from date of filing the Notice of Completion of the above-named Project by the Board of Trustees of the School District without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted. We also agree to repair any and all damages resulting from such defects.

In the event of our failure to comply with above-mentioned conditions within a reasonable time but in no case longer than ten (10) calendar days after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED (Subcontractor)

(Name)

(Address)

(License Number)

(Date of Signing)

COUNTERSIGNED (General Contractor)

(Name)

(Address)

(License Number)

(Date of Signing)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general requirements and procedures for compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".

- 1. Chapter 5- Non-Residential Mandatory Measures.

1.2 RELATED REQUIREMENTS

- A. Pertinent sections specifying erosion control.
- B. Section 01 3543, Environmental Procedures.
- C. Section 01 6116, Volatile Organic Compound (VOC) Restrictions.
- D. Section 01 7419, Construction Waste Management and Disposal.
- E. Section 01 7700, Closeout Procedures.
- F. Pertinent sections specifying landscape irrigation.

1.3 DEFINITIONS

- A. CAL-Green Definitions: Certain terms are defined by CAL-Green in Chapter 5 of the code. Words and terms used in this section shall have the meanings shown therein.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Respond to questions and requests from Architect and the jurisdiction having authority regarding CAL-Green credits that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures. Document responses as informational submittals.

1.5 SUBMITTALS

- A. CAL-GREEN Submittals: Submit CAL-GREEN submittals required by code and in other Specification Sections.
 - 1. CAL-GREEN submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated CAL-GREEN requirements.
 - 2. Acceptable verification submittals are specified in the related sections.

SUSTAINABLE DESIGN REQUIREMENTS
SECTION 01 8113.10
3431006

PART 2 - PRODUCTS

2.1 REQUIREMENTS - GENERAL

- A. Provide products and procedures necessary to confirm CAL-GREEN compliance required in this Section. Although other Sections may specify some CAL-GREEN requirements, the Contractor shall determine additional materials, techniques, means, methods and procedures necessary to comply with CAL-GREEN requirements.

2.2 OUTDOOR WATER USE

- A. Section 5.304.3.1: Irrigation Controllers: Comply with requirements of this code section, local ordinances and Section 32 8000.

2.3 CONSTRUCTION WASTE REDUCTION

- A. Section 5.408 Construction Waste Management, Diversion and Recycling: Comply with requirements of this code section, local ordinances and Section 01 7419.

2.4 POLLUTANT CONTROL

- A. Section 5.504.3 Indoor Air Quality: Comply with requirements of this code section, local ordinances and Section 01 3543.
 - 1. During storage, rough installation and until final start-up of HVAC equipment, securely cover all ducts and air distribution component openings with plastic, tape, sheet metal or other methods acceptable to enforcing agency to reduce dust or debris collected in the system.
- B. Section 5.504.4 Finish Material Pollutant Control: All Finish materials shall comply with requirements of this code section, local ordinances and Section 01 6116.

PART 3 - EXECUTION

3.1 GENERAL

- A. Comply with Section 01 7419, Construction Waste Management and Disposal.
- B. Comply with execution requirements of related sections and applicable local codes and ordinances.

END OF SECTION

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Last Updated: April 8, 2019

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Clear sealer applied to cured concrete at exposed interior concrete slabs and toppings.
2. Stained concrete finish.
3. Slip-resistant texturing of existing flat work.
4. Materials, equipment, and apparatus not specifically specified or noted on the Drawings, but which are obviously necessary to complete the work specified.

1.2 RELATED REQUIREMENTS

- A. Section 01 4520, Concrete Floor Moisture Content and PH Testing.
- B. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- C. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
1. E303: Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:

1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

CONCRETE FINISHES
SECTION 03 3600
3431006

1.5 COORDINATION

A. General:

1. Coordinate with Section 03 3000, Cast-in-Place Concrete, for concrete mixes, aggregates, surface tolerances, textures, and acceptable methods of curing concrete to receive specified stains and sealers including use of surface retarders.
2. Coordinate finishing of exposed concrete flatwork.
3. Protect to prevent damage by impact or stains from rubbish and the work of other trades during concrete curing period and prior to application of stains and sealers. Application of stains and sealers to a contaminated concrete surface is not acceptable.

B. Curing:

1. Concrete to receive stain shall be cured with new and unwrinkled, nonstaining curing paper. Do not use curing compounds. Do not overlap paper.
2. Allow to cure in accordance with recommendations of stain manufacturer prior to application of stain. Curing time may vary based on selected colors.
3. If required to achieve selected color, cure concrete with color hardener in lieu of curing paper.

1.6 ACTION SUBMITTALS

A. Product Data: Manufacturer's specifications, application instructions, and general recommendations. Include:

1. Instructions and recommendations for cleaning and preparation of surfaces.
2. Coating application techniques.
3. Equipment to be used.
4. Coverage rates.
5. Protection of adjacent materials.
6. Cleaning methods for overspray.

B. Samples:

1. Flatwork: See mockup requirements.
2. Each specified sealer, in selected gloss and specified slip resistance, applied in step fashion to suitable substrate.
 - a. Samples shall be a minimum 24 inches by 24 inches.
 - b. Samples shall be prepared to demonstrate a range of gloss levels within general range selected by Architect.

1.7 INFORMATIONAL SUBMITTALS

- A. Statement of qualifications for installer of stained concrete finishes.
- B. Results of field testing for slip resistance.

- C. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance instructions and list of recommended maintenance products for each finish system.
- B. Guarantee: Submit Subcontractor's guarantee.

1.9 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Colored Flat Work: A minimum of 5 years' documented experience with colored concrete.
- B. 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.
- C. Products shall be compatible with other specified products with which they may come in contact, including concrete release agents and applied coatings. Bring discrepancies promptly to the attention of the Architect, in writing.
- D. Mockups: Provide mockups and test areas for each finish of concrete to verify surface preparation, wet and dry slip resistance, **[color selection,]** visual effect, sheen, and product application techniques.
 - 1. Notify Architect 5 business days in advance of dates and times when mockups will be prepared.
 - 2. Each mockup shall be of sufficient size for Architect to adequately evaluate concrete appearance and finishing but not less than 48 inches square.
 - 3. Use same mix design and curing methods proposed for final installation.
 - 4. Contractor shall provide up to 3 mockups for initial evaluation and approval.
 - 5. Finish, sheen, texture, **[color,]** and general appearance shall match that of accepted samples and of control samples provided by Architect.
 - 6. Maintain final accepted mockups in an undisturbed condition as a standard for judging the completed Work.
 - 7. Demolish and remove mockups not approved for inclusion as part of the work when directed.

CONCRETE FINISHES
SECTION 03 3600
3431006

1.10 FIELD CONDITIONS

- A. Protect exposed surfaces, including flat work, as required to prevent damage by impact or stains from rubbish and the work of other trades.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Dry or Wet Slip Resistance:
 - 1. Walk surfaces, after application of sealer, shall be tested using ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
 - a. Pendulum Test Value (PTV) shall be 45 or greater under dry and wet conditions.
 - b. Individual tests shall be made for each concrete substrate texture.
 - c. Test results shall be reported in writing.
 - 2. Alternative test method, such as use of a BOT-3000E digital tribometer, if proposed, shall provide results for both wet and dry conditions.
- B. Clear Penetrating Sealer:
 - 1. Shall not darken, stain, or discolor substrate.
 - 2. Shall be formulated for low-pressure application to concrete flatwork.
 - 3. Shall be formulated to stop intrusion of water, salts, and de-icing chemicals.
- C. Sustainable Design:
 - 1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.2 SURFACE TREATMENTS AND COLORING AGENTS

- A. Clear Sealer at Exposed Interior Concrete Flatwork not Stained or Scheduled to Receive an Applied Floor Covering: Water based, VOC compliant, "Carefree Floor Finish/Sealer" by Diversey Inc., or equal meeting specified slip-resistance requirements.
- B. Abrasive Additive: Finely ground, low density, insoluble polymer slip-resistant additive for film forming sealers; "Sure-Step" by W.R. Meadows, or equal.
 - 1. Provide as additive to sealers if required to meet specified slip-resistance requirements.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION PRIOR TO STAINING AND SEALING

- A. Allow concrete to cure prior to application of stain or sealer.

- B. Surfaces shall be cleaned and free of gypsum board sanding dust, joint treatment droppings, paint, grease, oil, and other foreign matter which would prevent necessary penetration and subsequent reaction of the stain solution with concrete surface.
- C. Comply with stain and sealer manufacturer's recommendations for methods to be used for cleaning each type of contaminant.
- D. Test for moisture content as specified in Section 01 4520, Concrete Floor Moisture Content and PH Testing, to ensure that surface is sufficiently dry.

3.2 SEALING INTERIOR CONCRETE FLAT WORK

- A. Curing:
 - 1. Concrete to receive stain shall be cured with new and unwrinkled, nonstaining curing paper. Do not use curing compounds. Do not overlap paper.
 - 2. Allow to cure in accordance with recommendations of stain manufacturer prior to application of stain. Curing time may vary based on selected colors.
- B. Preparation After Curing:
 - 1. Surfaces shall be cleaned and free of dark alkali spots, plaster, paint, grease, oil, soap, and other foreign matter which would prevent necessary penetration and subsequent reaction of the stain solution with concrete surface to be stained.
 - 2. Comply with stain manufacturer's recommendations for methods to be used for cleaning each type of contaminant. Cleaning methods shall include pressure washing of non-flatwork and rotary machine cleaners for flatwork as required.
- C. Application of Stain:
 - 1. Apply by brush in accordance with the manufacturer's instructions. Apply in two coats, unless only one coat is required over color hardener to achieve selected color.
 - 2. Verify manufacturer's recommended drying time between coats.
 - 3. After second coat of stain has dried, remove residue salts from surface by wet scrubbing with a stiff brush and flushing with clean water until rinse water runs clear. Protect surrounding areas and construction from damage by runoff.
 - 4. Provide traffic barriers to recirculate construction traffic. Surfaces shall be allowed to dry without covering.
- D. Stained slab shall be allowed to dry completely and shall be tested for dryness acceptable to sealer manufacturer prior to application of sealer. Do not proceed until concrete meets dryness requirements.
- E. Final Sealer:
 - 1. Use either clear or colored sealer as required to achieve accepted colors. Apply two coats of sealer to properly dried stain coats in accordance with manufacturer's instructions. Sealer shall be spray applied and rolled.
 - 2. Follow manufacturer's recommended time between coats.

CONCRETE FINISHES
SECTION 03 3600
3431006

3. Provide dust control in area of concrete toppings for the first 48 hours after application of sealer. No carpentry or gypsum board work shall be done during this period.
4. Verify with sealer manufacturer the use of Kraft paper covering of sealer as the work progresses. Protective covering shall be applied only after manufacturer recommends product "off-gassing" is finalized. Premature covering may contribute to a finish that looks "cloudy."
5. Heavy equipment, scaffolding, or other activity which may damage surface shall not be allowed on the surface until sealer is fully cured.

3.3 APPLICATION OF CLEAR SEALER AT INTERIOR CONCRETE FLATWORK

- A. Locations of Use:
 1. Exposed existing concrete slab within new office.
- B. Apply specified sealer using a low-pressure, non-atomizing spray applicator or by pouring followed by a squeegee or a broom for even distribution in accordance with manufacturer's instructions and as follows.
 1. Apply uniformly and with sufficient material for surface to remain wet for 30 to 60 seconds before penetrating.
 2. Broom out puddles until they penetrate the surface.
- C. If prepared surface is extremely porous and if recommended by manufacturer, apply a second coat after first coat has completely penetrated surface and initial surface drying of first coat has become visible. Apply second coat in a direction 90 degrees from the first coat.
- D. A lambswool applicator should be used for small areas.
- E. Allow material to cure at least 4 hours before allowing any traffic on surface.

3.4 CLEANING

- A. Clean spillage from adjoining surfaces immediately after spillage while still wet. Comply with manufacturer's recommendations for cleaning.

END OF SECTION

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Last Updated: March 23, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Description of Work: Work of this Section includes, but is not limited to, the following:
 - 1. Framing
 - 2. Fasteners
 - 3. Underlayment and floor coverings
 - 4. Sound attenuation materials

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. NONE

1.3 SYSTEM DESCRIPTION

- A. Basis of design is USG STRUCTO-CRETE® Brand Structural Panels floor system consists of steel or wood joists, trusses or other framing members and 3/4" USG STRUCTO-CRETE® Brand Structural Panels installed with mechanical fasteners. 3/4" STRUCTO-CRETE® Panels are a high-strength reinforced concrete panel typically for use in noncombustible construction, as required by the applicable building codes. Adhesives are not recommended, nor required for fastening panels to the framing. Substitutions will be considered but must be part of a UL listed assembly that fits the designed assembly.

1.4 REFERENCES

- A. ICC-ES AC318 – Acceptance Criteria for Structural Cementitious Floor and Roof Sheathing Panels
- B. ICC-ES AC319 – Acceptance Criteria for Horizontal Diaphragms Consisting of Structural Cementitious Floor Sheathing Panels Attached to Cold-Formed Steel Framing
- C. ASTM A588/A588M – Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield Point, with Atmospheric Corrosion Resistance
- D. ANSI/AISI S100 – North American Specification for the Design of Cold-Formed Steel Structural Members
- E. ANSI/AISI S210 – North American Specification for Cold-Formed Steel Framing – Floor and Roof System Design
- F. ANSI/AISI S214 – North American Specification for Cold-Formed Steel Framing – Truss Design
- G. ANSI/AISI S230 – Standard for Cold-Formed Steel Framing – Prescriptive Method for One- and Two-Family Dwellings

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- H. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
- I. ASTM E119 – Standard Test Method for Fire Tests of Building Construction and Materials
- J. ASTM E136 – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C

1.5 SYSTEM REQUIREMENTS

- A. Performance Requirements: Fabricate and install systems as appropriate for use and application of the project. See ICC ESR-1792 Table 3A for Allowable Uniform Loads at various displacement limits with support framing from 24 to 12 inches on center and one, two and three span conditions.
 - 1. Fasteners:
 - a. Follow the selected fastener layout for Screw Patterns, for the design Diaphragm Loads as described in the current [ICC-ES Evaluation Report ESR-1792](#).
 - 2. Panel Layout:
 - a. Follow the 3/4" STRUCTO-CRETE® Panels application described in the current [ICC-ES Evaluation Report ESR-1792](#).
- B. Fire Resistance Ratings: Where fire resistance classifications are indicated, provide materials and application procedures identical to those listed by UL or tested according to ASTM E119 for type of construction shown.
Note: *Fire-resistance ratings may require lighter gauge framing than that required for Shear- or Uniform-Loading. In this case, the gauge and joist depth must be selected by the strongest governing factor.*
- C. Noncombustible Ratings: Where noncombustible assemblies are required, provide materials and application procedures identical to those tested according to ASTM E136, "Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C.
Note: *Materials with modified ASTM E136-16 evaluations are not acceptable.*

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Deliver material to site promptly without undue exposure to weather.
 - 2. Deliver in manufacturer's unopened containers, pallets, or panels fully identified with name, Brand, type, and grade.
- B. Storage:
 - 1. Store above ground in dry, ventilated space.
 - 2. Protect materials from soiling, exposure, and damage.
 - 3. If stored outside, material shall be covered with waterproof tarps.
Note: *If 3/4" STRUCTO-CRETE® Panels are frozen while stored outdoors, allow*

to thaw-out naturally. Do not use salts or fertilizers to defrost the panels or attempt to pry them apart.

4. Panels must be stored over stable soil or other surface. Soil or surface must be able to carry the load of the stored pallet(s). Each 20-piece pallet weights 3,500 lbs (1542 kg). It is recommended that the load carrying capacity of the floor or surface be verified before storing panels.
5. Pallets must not be stacked out of alignment by more than +/- 1/2" (13 mm), measured on any side of the pallet.

1.7 PROJECT CONDITIONS

A. Environmental Requirements:

1. When mechanically fastened, do not install 3/4" STRUCTO-CRETE® Panels when ambient or conditioned temperature is below 0 °F (-18 °C).
2. Prior to the application of finished flooring, 3/4" STRUCTO-CRETE® Panels must be conditioned at the same temperature as required for the finished flooring for at least 48 hours.
3. Do not apply finished flooring over 3/4" STRUCTO-CRETE® Panels when wet, frozen or with surface frost.

Note: *If installed panels have snow or ice, do not use salts or defrosting agents, sand is recommended over slippery surfaces.*

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Structural Concrete Panel: Listed products establish standard of quality and are manufactured by United States Gypsum Company (USG), Chicago, IL.

2.2 MATERIALS

A. Structural Concrete Panel:

1. 3/4" USG STRUCTO-CRETE® Brand Structural Panels are a cementitious, alkali-resistant glass-fiber reinforced, noncombustible, structural subfloor panel. Manufactured in accordance with Acceptance Criteria AC318. **NO GLUE REQUIRED.**
 - a. Panel Dimensions:
 - 1) Thickness: **3/4" (19 mm)**
 - 2) Width: **4' (1220 mm)**
 - 3) Lengths: **[8' (2440 mm)] or [6' (1829 mm)] or [6'-8" (2032 mm)]**
 - 4) Long Edges: **Structural Tongue & Groove**
 - b. Panel Properties:
 - 1) Density: **84.8 lb/ft³ (1358 kg/m³)**
 - 2) Weight: **5.3 lbs/ft² (26 kg/m²)**

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- 3) Allowable Load: **204 psf** (1 span), **143 psf** (2 spans), **150 psf** (3 spans) with 24" o.c. at L/360 displacement limit. Refer to ICC ESR 1792 for complete Uniform Load Table (3A).
- 4) Long Term Durability: **100%** properties retention tested in accordance with ASTM C1185, Sec. 13 (140o F water for 56 days, tested after 48-hour room dry).
- 5) Noncombustibility: **Pass** tested in accordance with ASTM E136
- 6) Total Organic Carbon: **< 1%** by weight¹
- 7) Surface Burning Characteristics: **0 Flame Spread / 0 Smoke Developed** tested in accordance with ASTM E84
- 8) Mold Resistance: **10** tested in accordance with ASTM D3273 (no growth) 0 tested in accordance with G21 (no growth)
- 9) Per section X1.5.1.1, commentary of ASTM E136, any building materials exceeding 3% combustible portion in noncombustible material is very likely to fail the noncombustibility test.

B. 3/4" STRUCTO-CRETE® Panels Recommended Fasteners:

- a. Use only fasteners recommended by [USG. Reference USG STRUCTO-CRETE® Brand Structural Panels Recommended Fasteners](#).
- b. Install using the recommended spacing and distance from the Ends (square cut) and Edges (tongue & groove) of the panel.
- c. Any length of USG recommended fasteners may be used but do not use a larger size fastener unless specified by the structural engineer.

C. Floor Coverings and Underlayment:

1. Follow floor covering manufacturers' installation procedures.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, adjoining construction and conditions under which work is to be installed. Do not proceed with work until unsatisfactory conditions are corrected.
- B. Steel framing to receive the 3/4" STRUCTO-CRETE® Panels shall be structurally sound, free from bows, twists, or other malformations and in general compliance with local building code requirements. Damaged framing shall be replaced before installation of 3/4" STRUCTO-CRETE® Panels.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Floor Finishes:

1. Leftover material shall be removed from the job site.
2. Remove all foreign material from the floor surface and vacuum all dust from the surface.

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3. Before the application of floor finish materials, ensure that all panels are properly fastened, with the fastener head driven flush or slightly below the surface of the panels. If required butt joints and T&G joints shall be filled with an elastomeric patching compound [cement-based compounds, can crack].
4. Direct application of bonded floor finishes to 3/4" STRUCTO-CRETE® Panels is not recommended.
5. If 3/4" STRUCTO-CRETE® Panels are left bare in extremely light traffic areas, it is recommended that you seal the panels with a concrete sealer to seal the porous surface.
6. Glass-Mat Facer – Provides surface protection during manufacturing and transportation. Removal of a portion or all of the glass-mat facer will not affect the structural performance, fire resistance, or noncombustibility characteristics of STRUCTO-CRETE® Panels.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior wall, soffit and parapet sheathing.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Pertinent Sections specifying wall cladding and finishes over sheathing.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International:
1. B117, Standard Practice for Operating Salt Spray (Fog) Apparatus.
 2. C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 3. C834, Standard Specification for Latex Sealants.
 4. C954, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
 5. C1002, Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 6. C1007, Standard Specification for installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
 7. C1177/C1177M, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 8. C1280, Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.
 9. D3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 10. D6329, Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers.

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11. E72, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
12. E96/E96M, Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
13. E119, Standard Test Methods for Fire Tests of Building Construction and Materials.
14. E136, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C.

D. Engineered Wood Association (APA):

1. APA Document PS-1, Structural Plywood Voluntary Product Standard.
2. APA Form No. E30, Engineered Wood Construction Guide.

E. Gypsum Association (GA):

1. GA-253, Application of Gypsum Sheathing.
2. GA-600, Gypsum Fire Resistance Design Manual.

F. International Code Council (ICC):

1. ICC-ES AC70, Power-driven Fasteners Driven into Concrete, Steel and Masonry Elements.

G. Underwriters Laboratories, Inc. (UL):

1. UL Fire-Resistance Directory.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:

1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, demonstrate compliance with specified attributes.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample of manufacturer's warranty.
- B. Research / Evaluation Reports: Provide ICC-ES report for fiberglass-mat faced gypsum sheathing showing compliance with the CBC.

- C. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.

1.8 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. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- C. Materials, components, assemblies, workmanship and installation are to be observed by the Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in original package or bundles bearing brand name and labeled with identification of manufacturer or supplier.
- B. Stack panels flat with spacers between each bundle to provide air circulation.
 - 1. Protect sheathing from weather by covering with waterproof sheeting, securely anchored.
 - 2. Support panels to prevent sagging.
- C. Handle gypsum sheathing to prevent damage to edges, ends, and surfaces.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Fire-Test-Response Characteristics:
 - 1. For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

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2. Fire-Resistance Ratings: Indicated by design designations from UL Fire-Resistance Directory or GA-600 Fire Resistance Design Manual.

B. Sustainable Design:

1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.2 GYPSUM WALL SHEATHING

A. Exterior Gypsum Sheathing: Fiberglass-faced, silicone-impregnated core complying with ASTM C1177, "DensGlass" by Georgia-Pacific Gypsum LLC as specified and the basis of design, or equal.

1. Core Thickness: 1/2 inch.
2. Surfacing: Fiberglass mat on face, back, and long edges.
3. Edges: Square.
4. Panel Size: 48 inches by 96 inches, 108 inches or 120 inches.
 - a. Use maximum length as allowable by wall framing.
5. Physical Properties:
 - a. Combustibility: Noncombustible when tested in accordance with ASTM E136.
 - b. Weight: 1.9 lb/sq. ft.
 - c. Racking Strength: Not less than 540 pounds per square foot, dry per ASTM E72.
 - d. Flexural Strength: 80 lbf, parallel in accordance with ASTM C1177/C1177M.
 - e. Humidified Deflection: Not more than 1/4 inch in accordance with ASTM C1177/C1177M.
 - f. Permeance: Not less than 23 perms in accordance with ASTM E96/E96M.
 - g. R-Value: 0.56 in accordance with ASTM C518.
 - h. Mold Resistance: Score of 10 when tested in accordance with ASTM D3273.
 - i. Microbial Resistance: UL Environmental GREENGUARD, 3-week protocol per ASTM D6329, will not support microbial growth.

2.3 WALL PLYWOOD

A. Nonstructural Plywood Sheathing APA Rating: Exterior C-D with exterior adhesive bond classification per APA Document PS-1.

1. Provide T&G (tongue and groove) panels where indicated.

B. Physical Properties:

1. Nominal Thickness: As indicated on Drawings.
2. Panel Size: 48 inches by 96 inches or 120 inches.

- a. Use maximum length allowable by wall framing.

2.4 FASTENERS

- A. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Corrosion resistant treated steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing board to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.
 - 1. For steel framing less than 0.0329 inch thick, attach sheathing to comply with ASTM C1002.
 - 2. For steel framing from 0.033 inch to 0.112 inch thick, attach sheathing to comply with ASTM C954.
- B. Screws for Fastening Sheathing to Wood Framing: Comply with ASTM C1002.
- C. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: Comply with ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

2.5 SHEATHING JOINT AND PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing Board: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing tape and sheathing, and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.
- B. Sheathing Tape for Glass-Mat Gypsum Sheathing Board: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads per inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing board.
- C. Refer to Section 07 9200, Joint Sealants, for penetration sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions with installer present and verify that field conditions are acceptable and are ready to receive work.
- B. Framing members shall not vary more than 1/8" from the plane of the faces of adjacent framing.
- C. Correct conditions detrimental to the proper and timely performance of this work before proceeding with installation.
- D. Commencement of work indicates acceptance of substrates.

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3.2 INSTALLATION - GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
 - 1. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.
- C. Coordinate wall, soffit and parapet sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- D. Do not bridge building expansion joints with panels.
- E. Cut and space edges of panels to match spacing of structural support elements.
- F. Locate sheathing panel edges 4 inches minimum away from reentrant wall opening corners, such as for windows, doors, louvers, and other openings.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.
- H. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. Requirements of referenced building code.
 - 2. ICC-ES evaluation report for fastener.

3.3 GYPSUM SHEATHING INSTALLATION

- A. General: Install in accordance with GA-253, ASTM C1280, and the manufacturer's written instructions.
- B. Fasten gypsum sheathing to framing with screws.
- C. Install boards with a 3/8 inch gap where non-load-bearing construction abuts structural elements.
- D. Install boards with a 1/4 inch gap where they abut masonry, concrete or similar materials that might retain moisture, to prevent wicking.
- E. Apply fasteners so heads bear tightly against face of sheathing boards but do not cut into facing.
- F. Vertical or Horizontal Installation: Abut ends of boards over centers of stud. Attach boards at perimeter and within field of board to each stud.
 - 1. Space fasteners approximately 8 inches on center and set back a minimum of 3/8 inch from edges and ends of boards.

2. At horizontal installations, stagger end joints of adjacent boards not less than one stud spacing.

3.4 PLYWOOD SHEATHING INSTALLATION

- A. Fasten nonstructural plywood sheathing to framing with screws.
- B. Space panels 1/8 inch apart at edges and ends.
- C. Abut ends of boards over centers of stud. Attach boards at perimeter and within field of board to each stud.
 1. Space fasteners in accordance with APA Form No. E30.
 2. At horizontal installations, install sheathing with grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing.

3.5 SHEATHING JOINT TREATMENT

- A. Treat sheathing joints according to sheathing manufacturer's written instructions.
 1. Treat all gaps greater than 1/4 inch with sealants.

3.6 DEFECTIVE WORK

- A. Repair damaged and defective work and eliminate functional defects. Where repair is not possible replace work.

3.7 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

END OF SECTION

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Last Updated: March 2, 2022*

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Through-penetration firestop systems:
 - 2. Fire-rated joint systems:

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
 - 1. C 518: Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.
 - 2. C 1193: Standard Guide for Use of Joint Sealants.
 - 3. E 84: Test Method for Surface Burning Characteristics of Building Materials.
 - 4. E 136: Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
 - 5. E 814: Test Method of Fire Tests of Through-Penetration Firestops.
 - 6. G 21: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- D. Underwriters Laboratories (UL):
 - 1. UL 1479. Fire Tests of Through-Penetration Firestops.
 - 2. UL 2079: Tests for Resistance of Building Joint Systems.

1.4 DEFINITIONS

- A. Firestopping: A material, or combination of materials, to retain the integrity of time-rated construction by maintaining an effective barrier against the spread of flame, smoke and gases.

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- B. Other Definitions: In accordance with the CBC.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:

1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

- B. Coordination:

1. Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed in accordance with specified requirements.
2. Scheduling: Sequence Work to permit firestopping materials to be installed after adjacent and surrounding work is complete but prior to covering or concealing of openings.

1.6 ACTION SUBMITTALS

- A. Product Schedule:

1. Clearly indicate a specific product and/or system for each type of firestopping condition.
2. For job conditions where no clearly defined UL-approved assembly exists, provide an engineering judgment from manufacturer. Where requested by Architect, submit drawings showing each condition to document proposed systems, materials, anchorage, methods of installation, and type of construction assembly being penetrated.
 - a. Engineering judgments shall follow requirements set forth by the International Firestop Council.
 - b. Proposed system shall be acceptable to local governing authorities.

- B. Product 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. Instruction details shall reflect actual job conditions.
2. Where available, include aging data for intumescent products.
3. Where available, include L rating indicating tested air leakage for products used in through-penetration systems.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification data for installer.

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- B. Manufacturer's letter of certification or certified laboratory test report stating that materials or combination of materials meet requirements specified in ASTM E 814 and classified as meeting these requirements in UL's Building Materials Directory.
- C. UL Certificates of Compliance.
- D. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.8 CLOSEOUT SUBMITTALS

- A. Certificate from Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.9 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 Project Inspector. Work not so inspected is subject to uncovering and replacement.
- D. Regulatory Requirements: UL Test 1479, "Fire Tests of Through-Penetration Firestops," or ASTM E 814 and UL 2079.
 - 1. Materials shall meet requirements of NFPA 101, "Life Safety Code" and NFPA 70, "National Electrical Code."
- E. Installer Qualifications: Experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance.
 - 1. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its through-penetration firestop system products to contracted Installer does not in itself confer qualification on buyer.
- F. Work under this Section may be divided among various trades, subject to limitation that same products for each firestopping system are used throughout.

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1.10 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.

1.11 FIELD CONDITIONS

- A. Environmental Requirements: Do not apply materials when temperature of substrate material and ambient air is below 60 degrees F. Maintain this minimum temperature before, during, and for three days after installation of materials.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Fire Ratings: As indicated on the Drawings.
- B. System Performance:
 - 1. General:
 - a. Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated, and passage of smoke and other gases.
 - b. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E 84.
 - c. Materials shall be compatible with each other and with other specified items with which they may come in contact and shall not cause corrosion of penetrating items.
 - d. Materials shall be free of solvents, asbestos, or PCBs, and shall be nontoxic to human beings at all stages of application and during fire conditions.
 - e. Firestopping shall remain sufficiently flexible after installation to accommodate expected vibration and movement between penetrating items and rated building components or assemblies or between adjacent building components or assemblies at joint systems, without affecting adhesion or integrity of system.
 - f. Materials shall not shrink noticeably after installation.
 - g. Caulk, foam, mortar, and putty materials shall be autobonding to permit changes to penetrating items.
 - h. Intumescent fireproofing products shall not be used in sound-rated assemblies.

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- i. Rating of firestopping materials or system shall in no case be less than rating of rated floor or wall assembly.
 2. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings as determined in accordance with ASTM E 814 but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.
 3. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined in accordance with ASTM E814, where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas.
 4. L-Rated Systems: Where through-penetration firestop systems are indicated in smoke barriers, provide through-penetration firestop systems with L-ratings of not more than 3.0 cfm/sq. ft at both ambient temperatures and 400 degrees F.
 5. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined in accordance with UL 2079, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.
 6. Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating of 0 as determined by ASTM G 21.
 7. For firestopping exposed to view, traffic, moisture, and physical damage, provide assemblies that do not deteriorate when exposed to these conditions.
 - a. At piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant, through-penetration, firestop systems.
 - b. At floor penetrations with annular spaces over 4 inches wide and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads, either by installing floor plates or by other means.
 - c. At penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
 - d. At joints involving metal deck or other construction with spray-on fireproofing, provide fire-resistive joint systems not requiring removal of spray-on fireproofing.
- C. Fire-Test-Response Characteristics: Firestopping shall comply with the following requirements.
1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, ITS-Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
 2. Through-penetration firestop systems are identical to those tested in accordance with ASTM E 814 under conditions in which positive furnace pressure differential of at least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Systems shall comply with the following requirements:
 - a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.

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- b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory," by ITS-Warnock Hersey, or by another qualified testing and inspecting agency.
 - 3. Fire-resistive joint sealant systems shall be identical to those tested for fire-response characteristics in accordance with UL 2079 under conditions in which the positive furnace pressure differential is at least 0.01 inch of water, as measured 0.78 inch from face exposed to furnace fire. Systems shall comply with the following requirements:
 - a. Fire Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
 - b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.
 - 4. Fire and Sound-Rated Conditions: Use fire-rated acoustic sealants.
- D. Sustainable Design:
- 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.2 FIRESTOPPING MATERIALS

- A. General:
- 1. Materials listed below are not necessarily all-inclusive, nor are all materials listed necessarily required to be used on the Project.
 - 2. Although several manufacturers may be listed for each type of firestopping, listed manufacturers vary for each Type, and products included with firestopping details and assemblies on the Drawings may use products not included in this Specification, it is the Contractor's responsibility to ensure that systems developed for firestopping on this project use approved systems from a single manufacturer unless products for required systems are not available from the selected manufacturer.
- B. Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E 136, with flame-spread and smoke-developed ratings of zero in accordance with ASTM E 84; "USG Firecode Compound" by United States Gypsum Co.," or equal.
- C. Firestop Mortar: Prepackaged dry mix of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogenous mortar; Hilti FS 637 "Firestop Mortar," or equal.
- D. Non-intumescent Firestop Sealant: One-part silicone elastomer; "Hilti CP 601S "Elastomeric Firestop Sealant," or equal.
- E. Intumescent Firestop Sealant: Hilti "FS-One," or equal.

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- F. Mastic Firestop Sealant: Single component, water based, mastic grade; Rectorseal "Metacaulk 1100" or equal.
- G. Firestop Foam: Two-component silicone elastomer; Hilti CP 620 "Fire Foam," or equal.
- H. Intumescent Fire Blocks: Hilti "FS-657" or equal.
- I. Flexible Firestop Spray Coating: Sprayable water-based coating; designed to form a flexible seal over mineral fiber firesafing; Hilti CP 672 "Speed Spray," or equal.
- J. Intumescent Putty and Putty Pads at Electric Boxes: Hilti CP 617 "Firestop Putty Pads" in required lengths and CP 618 "Firestop Putty Sticks," or equal.
- K. Intumescent Pipe Wrap: Hilti CP 645, 648E or 648S "Firestop Wrap Strip," or equal.
- L. Intumescent Sheet: Self-supporting board or panel. Hilti CP 675T "Firestop Board with Accessories," or equal.
- M. Intumescent Sleeves, Collars, and Plastic Pipe Devices: Shop or field fabricated; heavy gauge galvanized steel with intumescent liner; Hilti CP 643N and 644 "Firestop Collar," or equal.
- N. High Temperature Firestop Calk: Single component; The Carborundum Company "FyrePutty, Tremco "FYRE-Shield," or equal.
- O. Spray-Applied, Elastomeric, Firestop Joint Sealant: Non-halogenated latex-based sealant for use at perimeter fire barriers; "SpecSeal Series AS200 Elastomeric Spray" by Specified Technologies, Inc., or equal.
- P. Intumescent Pillows/Bags, if Approved: Reusable, heat-expanding pillows/bags composed of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives; Rectorseal "Firestop Pillows," or equal.

2.3 FIRESAFING, ACCESSORIES, AND OTHER MATERIALS

- A. Mineral Fiber Firesafing/Backing Material:
 - 1. Unfaced Mineral Fiber: 4 pcf, suitable for friction fit in voids. Ceramic or cementitious-blend fiber is also approved. Do not use glass fiber.
 - 2. Foil Faced Mineral Fiber: Same as unfaced mineral fiber but with aluminum foil facing on one side.
 - 3. Properties:
 - a. Noncombustible as defined in NFPA Standard 220 when tested in accordance with ASTM E 136.
 - b. Thermal Conductivity: 0.25 to 0.23 k-value per ASTM C 518.
 - c. Surface-Burning Characteristics:
 - 1) Flame Spread: 15 (10 to 25 with foil facing).
 - 2) Fuel Contributed: 0 (5 with foil facing).

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3) Smoke Developed: 0.

B. Accessories:

1. Provide primers, cleaners, joint fillers, packing, and other accessory materials required for installation of firestop sealants, as applicable to installation conditions indicated.
2. Provide impaling clips, cinch shields, and similar items required for installation of backing material.
3. Provide protective covers or devices for soft firestopping and firesafing products that will be exposed in finished construction.

C. Other Facing and Backing Materials: As recommended by firestopping manufacturer. Use fire resistive material where possible.

2.4 MIXING

- A.** For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Prior to installation of the work of this Section, carefully inspect and verify that installed work of all other trades is complete to the point where this installation may properly commence. Starting of work shall imply acceptance of conditions as they exist.
- B.** Verify that specified items may be installed in accordance with the approved design.
- C.** In event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PREPARATION

- A.** Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.

3.3 INSTALLATION - GENERAL

- A.** Installation shall be in strict conformance with referenced standards, the manufacturer's written directions, as shown on the Drawings and as specified.
- B.** Comply with ASTM C 1193 for installation of elastomeric joint sealants.

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- C. Install materials at all penetrations, joints, intersections and openings through fire rated assemblies including walls, floors, ceilings and partition openings as required to maintain integrity and rating of assembly.
- D. At sound-rated fire-rated construction, use only permanently resilient firestopping materials.
- E. Exposed sealant shall be trowelled smooth.

3.4 INTUMESCENT FIRESTOPPING

- A. Use intumescent materials or devices where nonmetal and insulated piping penetrates fire-rated construction.
- B. Intumescent materials are approved for use in lieu of or in addition to other firestopping products in other locations where appropriate.

3.5 ELECTRICAL BOXES AND UTILITY OUTLETS

- A. Steel electrical outlet boxes on opposite sides of walls requiring protected openings shall be separated by a horizontal distance of 24-inches.
- B. Steel electrical outlet boxes which occur in combination with outlet boxes of any size such that the aggregate area of unprotected outlet boxes exceeds 100-square inches in any 100-square feet of wall area shall be protected by an approved material or detail to decrease the aggregate area of unprotected utility boxes to less than 100-square inches in any 100-square feet of wall.
- C. Steel electrical outlet boxes which exceed 16-square inches in area shall be protected with specified electrical box treatment.
- D. Utility and electrical outlets or boxes shall be securely fastened to the stud or framing of the wall or ceiling assembly.
 - 1. The opening in the gypsum board shall be cut so that the clearance between the box and the gypsum board does not exceed 1/8-inch.
 - 2. In smoke partitions, fill the 1/8-inch gap with an approved fire-rated sealant.

3.6 ADJUSTING AND CLEANING

- A. The premises shall be kept free from accumulation of waste and rubbish. At the completion of the work and as necessary during the progress of the work, remove from the premises all surplus materials, rubbish, and debris.
- B. Upon completion, thoroughly clean all exposed surfaces as recommended by the manufacturer, in a manner that will not affect the finish appearance.

3.7 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

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- 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. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

3.8 FIELD QUALITY CONTROL

- A. Verify that firestopping is properly installed before concealing or enclosing firestopped areas.
- B. Firestopping shall remain accessible until inspection and approval by governing authorities.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sealants and backing for interior and exterior joints.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Pertinent Sections specifying sealants or referencing this Section for sealant products and installation requirements.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- C. American Concrete Institute (ACI) Publications and Standards:
 - 1. ACI 302.1R: Guide to Concrete Floor and Slab Construction.
 - 2. ACI 360R-10: Guide to Design of Slabs-on-Ground.
- D. ASTM International (ASTM):
 - 1. C834: Standard Specification for Latex Sealants.
 - 2. C919: Standard Practice for Use of Sealants in Acoustical Applications.
 - 3. C920: Standard Specification for Elastomeric Joint Sealants.
 - 4. C1193: Standard Guide for Use of Joint Sealants.
 - 5. C1247: Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.
 - 6. C1248: Standard Test Method for Staining of Porous Substrate by Joint Sealants.
 - 7. C1311: Standard Specification for Solvent Release Sealants.
 - 8. C1330: Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
 - 9. C1521: Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

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10. D1667: Standard Specification for Flexible Cellular Materials - Poly (Vinyl Chloride) Foam (Closed-Cell).
 11. E90: Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- E. Federal Specifications (FS):
1. FS TT-S-001657: Sealing Compound--Single Component, Butyl Rubber Based, Solvent Release Type.
- F. South Coast Air Quality Management District (SCAQMD):
1. Rule 1168: Adhesive and Sealant Applications.
- G. U.S. Food & Drug Administration (FDA):
1. Code of Federal Regulations: Title 21, 21 CFR 177.2600, Rubber Articles Intended for Repeated Use.

1.4 DEFINITIONS

- A. Sealant Terminology in accordance with ASTM C834 and ASTM C920:
1. Type C: Clear / translucent sealant.
 2. Type OP: Opaque pigmented sealant.
 3. Type S: Single component sealant.
 4. Type M: Sealant with two or more components.
 5. Grade NS: Nonsag sealant.
 6. Grade P: Pourable sealant.
 7. Grade -18°C: Sealant with low temperature flexibility tested to -18°C (0°F).
 8. Grade 0°C: Sealant with low temperature flexibility tested to 0°C (32°F).
 9. Grade NF: Sealant does not meet low temperature flexibility requirements.
 10. Class 12-1/2: Sealant capable of handling movement, either contraction or expansion, of 12.5 percent of the original joint width.
 11. Class 25: Sealant capable of handling movement, either contraction or expansion, of 25 percent of the original joint width.
 12. Class 35: Sealant capable of handling movement, either contraction or expansion, of 35 percent of the original joint width.
 13. Class 50: Sealant capable of handling movement, either contraction or expansion, of 50 percent of the original joint width.
 14. Class 100 / 50: Sealant capable of handling movement of 50 percent contraction and 100 percent expansion.
 15. Use Related to Exposure:
 - a. Use NT: Nontraffic.
 - b. Use T: Traffic.
 - c. Use I: Immersible.
 16. Use Related to Material:

- a. Use A: Sealant used in contact with aluminum.
- b. Use G: Sealant used in contact with glass.
- c. Use M: Sealant used in contact with mortar.
- d. Use O: Sealants used in contact with all other materials other than those previously listed.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Pre-Installation Meeting: Conduct at Project site. Review joint application procedures, compatibility tests, adhesion tests, and warranty requirements in a meeting involving Architect, Project Inspector, installer, manufacturer or manufacturer's representative.
- C. Coordination:
 - 1. Use of different manufacturer's sealant types for application at exterior wall and glazing systems is not permitted. It is required that a single source for silicone sealants be used on this Project. The Contractor is responsible for coordinating compliance with this requirement where installation of sealants is delegated to various Subcontractors installing the exterior envelope systems for the Project.
 - 2. Contractor shall coordinate and be responsible for compatibility and performance between sealants and other materials, and related Sections using sealants which may be in direct contact with work of this Section or adjacent to the other. Isolate and prevent of incompatibility between sealants in accordance with manufacturer's specifications, recommendations and instructions.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, demonstrate compliance with specified attributes.
 - 1. Include color chart from manufacturers for each joint sealant product required.
 - 2. Provide certification by joint sealant manufacturer that materials provided for this Section are 100 percent asbestos-free.
- B. Samples for initial Selection: In form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2 inch wide joints formed between two 6 inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

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D. Joint-Sealant Schedule: Include the following information.

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant colors (multiple colors will be required).

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

1. Preconstruction Compatibility and Adhesion Test Reports from sealant manufacturer, indicating the following:
 - a. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - b. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
2. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in this Section.

D. Sustainable Design:

1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

E. Sample of manufacturer's warranty.

F. Record of Pre-Installation Meeting.

1.8 CLOSEOUT SUBMITTALS

A. Warranty and Guarantee: Submit executed warranty and extended Contractor guarantee.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of sealants and backing required for this Project.

- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single Source Responsibility: Obtain each kind of joint sealant from single source from single manufacturer.
- D. Materials, components, assemblies, workmanship and installation are to be observed by the Project Inspector. Work not so inspected is subject to uncovering and replacement.
- E. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Testing is not required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.
- B. Preconstruction Compatibility and Adhesion Testing: Submit to sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Submit not fewer than eight pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

1.11 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.12 FIELD CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.

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2. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.13 WARRANTY AND GUARANTEE

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Standard Guarantee, furnish Owner with manufacturer's fully executed written warranty for sealant against defects in materials and workmanship for a period of 5 years:
- B. Contractor: in addition to its standard Guarantee under the Contract, furnish Owner a special extended written five-year guarantee, cosigned by installer, for sealant, agreeing to replace any and all joints that leaks or otherwise fails to perform as required within guarantee period as a result of failure of materials or installation workmanship at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:
 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
- B. Building Envelope: Make watertight and weatherproof.
 1. Exterior work that does not remain watertight and all work which does not retain all properties inherent in the product as stipulated by the manufacturer will be considered faulty.
- C. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
- D. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.
- E. Design Requirements:
 1. Seal building joints with non-sag type sealant.
 2. Seal floor joints with self-leveling or slope grade self-leveling type sealant.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Liquid-Applied Joint Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.
 - 1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- E. Colors:
 - 1. General:
 - a. Architect will provide color selections and locations for each sealant type and for Contractor's use.
 - b. Not all locations will have the same color.
 - c. Custom colors may be required.
 - 2. Provide color of exposed joint sealants to comply with the following:
 - a. Provide colors matching selections made by Architect from manufacturer's full range of colors for products of type indicated.
 - b. Request color selection for exposed products listed without a preselected color.

2.3 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100 / 50, for Use NT.
 - 1. Products: The following, or equal:
 - a. The Dow Chemical Company; "DOWSIL" 790.
 - b. Sika Corporation, Construction Products Division; "Sikasil" WS-290.
- B. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 50, for Use NT.
 - 1. Products: The following, or equal:

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- a. Dow Corning Corporation; "DOWSIL 795 Building Sealant".
 - b. Sika Corporation, Construction Products Division; "Sikasil WS-295."
- C. Single-Component, Nonsag, Non-Bleed, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 50, for Use G, M, A and O.
 - 1. Products: The following, or equal:
 - a. The Dow Chemical Company; "DOWSIL 756 SMS."
 - b. Momentive Performance Materials; "SCS9000 SilPruf NB."
- D. Single-Component, Nonsag, One Part RTV Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, designed for adhering to low energy surfaces common in sheet or peel and stick weather resistant barriers.
 - 1. Products: The following, or equal:
 - a. The Dow Chemical Company; "DOWSIL" 758.
 - b. Sika Corporation, Construction Products Division; "Sikasil-N Plus."
- E. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, for Use NT, A and O.
 - 1. Products: The following, or equal:
 - a. The Dow Chemical Company; "DOWSIL 786 Mildew Resistant."
 - b. Momentive Performance Materials; GE Silicones "Sanitary SCS1700."

2.4 URETHANE JOINT SEALANTS

- A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 35, for Use NT.
 - 1. Products: The following, or equal:
 - a. BASF Master Builders Solutions; "MasterSeal NP 1."
 - b. Sika Corporation, Construction Products Division; "Sikaflex-1a."
- B. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Use NT, M, A and O.
 - 1. Products: The following, or equal:
 - a. BASF Master Builders Solutions; "MasterSeal NP 2."
 - b. Sika Corporation, Construction Products Division; "Sikaflex-2c NS."
- C. Multicomponent Urethane Joint Sealant: ASTM C920; self-leveling, Type M, Grade P, Class 25, Uses T, M, A, O, and approved by manufacturer for wide joints up to 1-1/2 inches.
 - 1. Products: The following or equal:
 - a. BASF Master Builders Solutions; "MasterSeal SL 2."
 - b. Sika Corporation, Construction Products Division; "Sikaflex 2c SL."

2.5 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311 and FS TT-S-001657, Type I.
 - 1. Products: The following, or equal:
 - a. Bostik, Inc.; "Chem-Calk 300."
 - b. Pecora Corporation; "BC-158."

2.6 ACRYLIC LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, nonsag, paintable, nonstaining. ASTM C 834, Type OP, Grade NF.
 - 1. Products: The following, or equal:
 - a. Pecora Corporation; "AC-20."
 - b. Sherwin Williams; 950A.

2.7 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant; ASTM C834, nonsag, paintable, nonstaining latex sealant. Effectively reduce airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.
 - 1. Products: The following, or equal:
 - a. Pecora Corporation; "AC-20" or "AC-20 FTR" (Fire and Temperature Rated).
 - b. United States Gypsum Company: USG "Sheetrock Acoustical Sealant,"

2.8 ADDITIONAL SEALANT MATERIALS

- A. Epoxy Sealant: Two-component, 100 percent solids content epoxy joint filler, semi-rigid with a Shore hardness of A90-95, and meeting requirements of American Concrete Institute Standards 302.1 R-04 and 360 R10 for industrial floor joint fillers.
 - 1. Products: The following, or equal:
 - a. Metzger/McGuire; "MM-80."
 - b. The Euclid Chemical Company; "Euco 700."

2.9 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backer Rods: Compressible, non-gassing rod-stock complying with ASTM C1330; polyethylene-jacketed polyurethane foam; butyl-rubber foam; neoprene foam; or other flexible, permanent, durable, non-absorptive closed-cell (Type C), open cell (Type O), or bi-cellular material (Type B) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

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1. Open cell rods shall not be used at sealant joints for horizontal surfaces.
 2. Closed cell rods shall not be used at double sealant joints.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.10 SEALANT ACCESSORIES AND ADDITIONAL MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests **[and field tests]**.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Spall Repair Mortar: Two-component structural epoxy binder and sand aggregate, producing a mortar that is easily worked and troweled. Early-set system designed specifically for the repair of industrial concrete floors subject to hard wheeled traffic. Compatible with joint filler and recommended by the joint filler manufacturer in writing.
1. Products: The following, or equal:
 - a. Metzger/McGuire: "Armor-Hard."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.
- B. Commencement of work indicates acceptance of substrates.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
1. Remove foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant

- manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 3. Remove laitance and form release agents from concrete.
 4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Spall Repair: Repair spalled joints in concrete slabs to produce joints of profiles recommended by joint sealer manufacturers.
- C. Joint Priming:
1. Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience.
 2. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- D. Masking Tape:
1. Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears.
 2. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General:
1. Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
 2. Seal around penetrations, holes, gaps, surface mounted fixtures and pipes entering building including light fixtures, mounting brackets and other similar items.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Joint Sealants at Building Exterior and Interior:
1. Seal the following joints with joint sealant:
 - a. Expansion and control joints in exterior walls, copings, parapets.

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- b. Joints between metal panels.
 - c. Joints between door and window frames and adjacent materials.
 - d. Joints between cabinets and countertops and walls.
 - e. Control joints in interior partitions, including portion above ceilings.
 - f. Expansion and control joints in solid exterior soffits.
 - g. Control joints in interior ceilings and soffits.
 - 2. Apply continuous bead of joint sealant in the following locations during installation of materials specified elsewhere:
 - a. In lap joints of sheet metal construction.
 - b. Roofing panels and roof-related sheet metal and flashing.
 - c. Between partition floor and ceiling tracks and adjacent construction.
 - d. Between end stud of partition and adjacent construction.
 - e. Under door sills and thresholds.
 - 1) Set sills and thresholds in continuous double bead of sealant.
 - 2) Provide sealant at butt ends of thresholds against door frame, around door frame and between threshold and resilient floor covering.
 - 3. Apply acoustic sealant at acoustic separations to make assembly airtight.
 - a. Seal perimeter and intersections of finish.
 - b. Seal around electrical boxes and other penetrations of finish; seal holes within electrical boxes; seal conduit ends.
 - c. Seal pipes which penetrate acoustic separations.
 - 4. Apply joint sealant at joints not specifically mentioned above which require sealant to meet the performance criteria cited in this Section.
- D. Installation of Sealant Backer Rods: Install sealant backer rods to comply with the following requirements:
- 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 - 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- E. Sealant Installation:
- 1. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
 - 2. Install sealants at the same time sealant backings are installed.

F. Tooling of Nonsag Sealants:

1. Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint.
2. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
3. Profiles:
 - a. Provide concave joint configuration in accordance with Figure 8A in ASTM C1193, unless otherwise indicated.
 - b. Provide flush joint configuration in accordance with Figure 8B in ASTM C1193, where indicated.
 - c. Provide recessed joint configuration in accordance with Figure 8C in ASTM C1193, of recess depth and at locations indicated.
 - 1) Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.4 SOUND ISOLATION

A. General:

1. At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant.
2. Install acoustical sealant at both faces of partitions at perimeters and through penetrations.
3. Comply with ASTM C919 and with manufacturer's written recommendations.
4. Sound-insulated partitions and floor/ceiling assemblies are indicated on the Drawings.

B. Intersections: Hold gypsum board back a maximum of 1/4 inch from intersecting gypsum board with floor or other surfaces, and apply a bead of acoustical sealant. Caulk void full and airtight with acoustical sealant.

C. Penetrations:

1. Penetrations by conduits, ducts, pipes, and around electrical junction boxes shall be sealed airtight.
2. Holes smaller than 1 inch but too large to seal with sealant shall first be packed with mineral fiber and then sealed airtight.
3. Holes larger than 1 inch shall first be packed with glass or mineral fiber, then sealed over with acoustical putty pads, and then sealed airtight.
4. Backs of electrical junction boxes in acoustically rated construction shall be sealed airtight with specified pads.

D. Install pipe isolation system wherever a pipe penetrates a stud or framing member.

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- E. Coordinate sealing with requirements of Section 09 2900, Gypsum Board.
- F. Where sound-insulated walls are fire rated, follow requirements of Section 07 8413, Penetration Firestopping.
- G. Prior to closing walls, obtain Project Inspector's and Architect's observation of insulation installation.

3.5 DEFECTIVE WORK

- A. Repair damaged and defective work and eliminate functional and visual defects. Where repair is not possible replace work. Adjust joints for uniform appearance.
- B. Cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

3.6 CLEANING AND PROTECTION

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.
- B. Clean excess adhesive from exposed surfaces of neoprene compression seal with solvent cleaner as recommended by manufacturer.
- C. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion.

3.7 SEALANT SCHEDULE

- A. General:
 - 1. Joints in construction between interior and exterior spaces and other designated or required locations to provide effective barrier against passage of elements:
 - a. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Use NT, M, A and O.
 - b. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, for Use NT.
 - 2. Specialty perimeters where required for appearance or weather tightness:
 - a. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Use NT, M, A and O; capable of 50 percent extension and compression movement.
 - b. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 35, for Use NT.
 - c. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 50, for Use NT.
 - d. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100 / 50, for Use NT.

B. Exterior Locations:

1. Joints Bordered by Glass: Single-component, nonsag, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 50, for Use NT.
2. Joints Bordered by Plastic: Single-component, nonsag, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 100 / 50, for Use NT.
3. Horizontal Joints in Exterior Walks Abutting Building Walls, Interior Concrete Floors: Multicomponent urethane sealant, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A.
 - a. Where walks abut structural slabs or stoops.
 - b. Where walks abut exterior wall of buildings.
 - c. Where exposed interior concrete slabs abut vertical surfaces.
 - d. Where sealant is shown on the Drawings for concrete slabs.
4. Membrane Roofing Sealants: Types recommended by roofing manufacturer and complying with requirements of this Section.
5. Steep Slope Roofing Sealants: Types recommended by roofing manufacturer and complying with requirements of this Section.
6. Sheet Metal and Roof Accessory Sealants: Types recommended by roofing manufacturer and complying with requirements of this Section.
7. Exterior Sheet Metal Lap Joints: Types recommended by manufacturer and complying with requirements of this Section.
8. Joints Between Concrete Panels, and Between Concrete Panels and Other Work: Single-component, nonsag, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 100 / 50, for Use NT and formulated to reduce or eliminate dirt pickup, surface streaking, and substrate staining.
9. Exterior Metal Panel Butt Joints and Trim: Types recommended by manufacturer and complying with requirements of this Section.
10. Sills and Thresholds: Butyl-rubber-based joint sealants, ASTM C1311.
11. All Other Exterior Joints:
 - a. Single-component, nonsag, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 100 / 50, for Use NT.
 - b. Single-component, nonsag, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 50, for Use NT.
 - c. Around perimeters of frames where door, window and louver frames abut concrete, masonry or other building materials.
 - d. Expansion and control joints in masonry.
 - e. Masonry at dissimilar material or at dissimilar masonry.
 - f. Miscellaneous locations where sealant is shown on Drawings.

C. Interior Locations:

1. Expansion and Control Joints:
 - a. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Use NT, M, A and O.

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- b. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 35, for Use NT.
 - c. Around perimeters of frames where door, window and louver frames abut concrete, masonry or other building materials.
 - d. Expansion and control joints in masonry walls.
 - e. Masonry at dissimilar material or at dissimilar masonry.
 - f. At miscellaneous locations where sealant is shown on Drawings.
- 2. Sills and Thresholds : Butyl-Rubber-based joint sealants, ASTM C1311.
- 3. Interior Concrete Slabs on Grade:
 - a. Warehouse Slabs, Subject to Wheeled Traffic: Two-component, 100 percent solids content epoxy joint filler.
 - b. Refrigerated Room Slabs: Two-component, 100 percent solids content polyurea elastomer joint filler.
 - c. All Other Locations: Urethane, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A; single component.
- 4. Interior Wet Areas, Around Plumbing Fixtures, Countertops Abutting Walls, Food Service Applications: Mildew-resistant, single-component, acid-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 25, for Use NT, A and O.
- 5. Interior Static Dry Joints as Required to Dress Appearance: Acrylic latex or siliconized acrylic latex joint sealant, ASTM C 834, Type OP, Grade NF
- 6. Sound Control Applications: Acoustical Sealant, ASTM C 834
 - a. Where Required for Sound Control with Limited Flame Spread: Acoustical sealant, ASTM C 834, fire-rated type.
- 7. Interior Concrete Slab Floors of Generator or Fuel Storage Tank Rooms (On-Grade or Suspended): Fuel Resistant Traffic Sealants.
- 8. Interior Tilt-Up Concrete Vertical Joints, Non-Wet Locations: Acrylic latex or siliconized acrylic latex sealant, nonsag, paintable, nonstaining, ASTM C 834, Type OP, Grade NF.
- 9. Interior Tilt-Up Concrete Vertical Joints, Wet locations: Mildew-resistant, single-component, acid-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 25, for Use NT, A and O.

END OF SECTION

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Last Updated: March 24, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hollow metal doors.
 - 2. Pressed metal frames.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 07 9200, Joint Sealants.
- D. Section 08 7100, Door Hardware.
- E. Section 08 8000, Glazing.
- F. Section 09 2900, Gypsum Board.
- G. Section 09 9100, Painting.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. American National Standards Institute (ANSI)/ Door and Hardware Institute (DHI)/Steel Door Institute (SDI):
 - 1. ANSI A250.6: Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
 - 2. ANSI A250.7: Nomenclature for Steel Doors and Steel Door Frames.
 - 3. ANSI A250.8: Recommended Specifications for Standard Steel Doors and Frames.
 - 4. ANSI A250.10: Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 - 5. ANSI/SDI A250.11: Recommended Erection Instructions for Steel Frames.
 - 6. ANSI/DHI A115: Hardware Preparation in Hollow Metal Doors and Frames.
- D. ASTM International (ASTM):

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1. A568/A568M: Specification for General Requirements for Steel, Carbon and High-Strength Low-Alloy Hot-Rolled Sheet and Cold-Rolled Sheet.
 2. A653/A653M,: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 3. A1008/A1008M: Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 4. A1011/A1011M: Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- E. Hollow Metal Manufacturers Association (HMMA) Division of the National Association of Architectural Metal Manufacturers (NAAMM):
1. Hollow Metal Manual.
- F. National Builders Hardware Association (NBHA):
1. Recommended Location of Builder's Hardware.
- G. National Fire Protection Association (NFPA):
1. No. 80: Fire Doors and Windows.
 2. No. 252: Fire Tests of Door Assemblies.
- H. Steel Door Institute (SDI):
1. SDI-107: "Hardware on Steel Doors Reinforcement--Application.
 2. SDI-111C: Recommended Louver Details for Standard Steel Doors.
- I. Underwriters Laboratories (UL):
1. UL 10B: Fire Tests of Door Assemblies.
 2. UL 10C: Positive Pressure Fire Tests of Door Assemblies.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Coordination:

1. Hardware supplier shall furnish steel door and frame manufacturer with accepted hardware schedule, hardware templates, and samples of physical hardware where necessary to ensure correct fitting and installation.
2. Preparation includes sinkages and cutouts for mortise and concealed hardware.

1.5 ACTION SUBMITTALS

A. Shop Drawings:

1. Show parts, connections and anchorages, adjacent materials, fully dimensioned and noted.
2. Include the following specific information:
 - a. Elevation and material of doors and frames.
 - b. Jamb and head details.
 - c. Hardware preparation locations and reinforcing details of doors and frames.
 - d. Door and frame location schedule.
 - e. Complete door and frame descriptive nomenclature.
 - f. Material description and gages.
 - g. Meeting stile details.
 - h. Methods of anchorage.
 - i. Glass molding details.
3. Use same reference numbers for details and openings as those indicated on Drawings.

B. Product Data: Submit list and complete descriptive data of products proposed for use. Include the following:

1. Manufacturer's specifications.
2. Manufacturer's installation instructions.
3. Manufacturer's maintenance instructions.

1.6 INFORMATIONAL SUBMITTALS

A. Sustainable Design:

1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:
 - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

B. Sample of manufacturer's warranty.

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1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.

1.8 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. Use materials and products of one manufacturer whenever possible.
- C. Materials, components, assemblies, workmanship and installation are to be observed by the Project Inspector. Work not so inspected is subject to uncovering and replacement.
- D. Manufacture labeled doors and frames in strict conformance with the specifications and procedures of Underwriters Laboratories Inc. (UL) or Warnock Hersey.

1.9 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 an upright position, protected under cover, dry conditions at least 4 inches off the ground and in areas so as to not interfere with the progress of the work. Doors with dents or other defects not repairable will be rejected.
- C. Transport, store and handle in strict conformance with the manufacturer's written recommendations.
- D. Assembled frames shall be stored in a vertical position, 5 units maximum in a stack.
- E. Do not use non-vented plastic or canvas shelters, because these create a humidity chamber and promote rusting. Remove wet wrapping or packing from doors and frames immediately. Provide 1/4 inch space between doors and between frames to promote air circulation.

1.10 FIELD CONDITIONS

- A. Verify that conditions are correct and proper for installation of products. Obtain accurate job dimensions of openings including floor elevations. Ascertain correct locations and arrangements of anchorage required to accommodate work.

1.11 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for doors and frames against defects in materials and workmanship, including twisting, buckling or warping.
 - 1. Warranty shall cover replacement of door plus costs of hanging and finishing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Steel Doors and Frames: Titan Metal Products, Inc., Merced CA; Door Components, Inc., Fontana, CA; Steelcraft; or equal SDI Certified manufacturer.

2.2 DESIGN AND PERFORMANCE CRITERIA

- A. Fire-Rated Assemblies:
 - 1. Fire-Rated Door Assemblies: Complying with NFPA 80 and listed and labeled by approved testing agency as part of a fire door assembly, complete with type of fire door hardware to be used, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 2. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by approved testing agency for fire-protection ratings indicated based on testing according to NFPA 257 or UL 9.
- B. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by approved testing agency based on testing according to UL 1784 and installed in compliance with NFPA 105.
- C. Testing and Labeling Agency for Labeled Assemblies: Underwriters Laboratories, Inc. (UL), Intertek Testing Services-Warnock Hersey (ITS-WH), or other qualified testing agency acceptable to authorities having jurisdiction.
- D. Sustainable Design:
 - 1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.3 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A568/A568M and ASTM A1011/A1011M.
- B. Cold-Rolled Steel Sheets: Commercial-quality carbon steel complying with ASTM A568/A568M and A1008/A1008M, exposed, matte finish, oiled.
- C. Galvanized Steel Sheets: Commercial-quality zinc-coated carbon steel complying with ASTM A653/A653M, with A60 or G60 zinc coating.
- D. Supports and Anchors: Fabricated of not less than 18-gauge galvanized sheet steel.
- E. Inserts, Bolts, and Fasteners: Manufacturer's standard units.
- F. Shop-Applied Paint: Rust-inhibitive primer, either air dried or baked on, suitable as a base for specified finish paints.

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2.4 FABRICATION - GENERAL

- A. Conform to requirements of SDI or NAAMM.
- B. Fabricate steel doors and frames to required profiles and sizes by forming with edges straight and sharp.
- C. Fit and fabricate accurately with corner hairline joints and all surfaces free from warp, wave, buckle, and other defects.
- D. Welding:
 - 1. In accordance with AWS standards for high-grade hollow metal work.
 - 2. Grind exposed beads smooth.

2.5 FINISH HARDWARE PREPARATION

- A. Prepare steel doors and frames to receive mortised and concealed hardware, including cutouts, reinforcing, drilling, and tapping, in accordance with final Finish Hardware Schedule and templates provided by hardware suppliers. Preparation shall comply with ANSI A115, where applicable, and SDI-107.
- B. Provide minimum gauge hardware reinforcing in accordance with Table 4 of ANSI A250.8 or Table 1 of ANSI A250.6, except as follows:
 - 1. Provide 7 gauge (0.167 inch, 4.2 mm) steel reinforcement for hinges.
 - 2. Provide 12 gauge (0.093 inch, 2.3 mm) for lock strikes and closers.
 - 3. Provide 14 gauge (0.067 inch, 1.7 mm) for surface applied hardware.
- C. Provide reinforcement at head of frames for surface mounted closers at doors whether or not closers are indicated.
- D. Punch lock jamb of frames; install rubber door silencers, 3 at single doors and 4 at each pair of doors. For pairs of doors, locate door silencers at head, 2 for each door. Omit silencers at tabled doors.
- E. Provide steel housing closures for hardware mortise to prevent intrusion of plaster, mortar or concrete.
- F. Provide full height, 3/4 inch deep x width of rabbet, polystyrene insulation at back of frames which will be fully grouted in-place using mortar type grout only and where continuous hinges are scheduled to be installed. Insulation is intended to act as a concrete block-out for future field drilling or tapping.
- G. Concealed Overhead Closers: Provide spaces, cutouts, reinforcing, and provisions for fastening in top rail of doors or head of frames as applicable.
- H. Reinforce steel doors and frames to receive surface-applied hardware.
 - 1. Perform drilling and tapping for mortise hardware at factory to templates furnished by hardware vendor.

2. Drilling and tapping for surface-applied hardware shall be done by hardware installer;
- I. Locate finish hardware as shown on final shop drawings or, if not shown, in accordance with NBHA publication "Recommended Location for Builder's Hardware."

2.6 HOLLOW METAL DOORS

- A. Prior to fabrication, verify every opening condition, including size, and coordinate with door sizes as shown on Drawings and approved submittals.
- B. Fabrication:
 1. Shop fabricate to required sizes and shapes.
 2. Form and weld with straight arrises, edges and corners; surfaces free from warp, wave, buckle, dents or other defects.
 3. Use of excessive plastic filler to conceal manufacturing defects is not acceptable. Construct in accordance with HMMA specifications and standards (latest edition) in addition to requirements as indicated in these Specifications.
 4. Fabricate exposed faces of doors only from cold-rolled steel.
 5. Vertical edges shall be beveled 1/8 inch in 2 inches.
 6. Make cutouts for required louvers and glazing.
 7. Exterior Doors:
 - a. Exterior doors shall be fabricated from specified galvanized-steel sheets.
 - b. The top and bottom of out-swinging exterior doors shall be closed with either a flush or inverted channel cap not less than 16 gauge, welded, filled, and finished smooth to provide protection from entry of water inside door.
 - c. Openings to be provided in the bottom closure to permit the escape of entrapped moisture.
- C. ANSI/SDI Classification:
 1. Interior Fire-Rated: Level 2, Model 2, seamless composite construction.
 - a. Face sheets shall be 18-gauge unless otherwise required for required rating.
 - b. Core: Mineral fiber or as standard with manufacturer to meet scheduled fire rating.
 - c. Rating: As scheduled.

2.7 DOOR ACCESSORIES

- A. Vision Frames: 20 gauge (0.042 inch, 1.0 mm) cold rolled steel, low profile, two-piece with mitered and welded corners with counter-sunk mounting holes for flush assembly; "LoPro" by Anemostat, or equal.
 1. Finish: Manufacturer's standard primer and field painted to match door color.
 2. Size: As indicated on the Drawings and to receive scheduled glass thickness.
 3. Frame shall be fire tested with UL and WHI mark at fire-rated doors where noted in door schedule.

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2.8 PRESSED METAL FRAMES

- A. Provide steel frames of the types and styles indicated on the Drawings.
- B. Gauges: In accordance with SDI recommendations for the door Grade specified.
 - 1. At Doors: Not less than 16 gauge.
 - 2. At Windows Independent of Doorframe: Not less than 20 gauge.
 - 3. Label Frames: 14 or as included in UL test procedure.
- C. Prior to fabrication, verify every substrate opening condition, including size and wall thickness, and coordinate with door sizes as shown on Drawings and approved submittals.
- D. Fabrication: Manufacturer's standard, modified where shown and specified.
 - 1. Fabricate frames from cold-rolled steel.
 - 2. Exterior frames shall be fabricated from specified galvanized-steel.
 - 3. Factory-assembled and welded into a single unit by frame manufacturer. Saw-miter or cope and tab frame miters, and continuously weld at return, face, rabbet, and stop.
 - 4. Shop fabricate with straight arises, edges and corners; surface free from warp, wave, buckle, dents or other defects. Use of excessive metallic filler to conceal manufacturing defects is not acceptable.
 - 5. Cross section profile as shown, depth to suit wall thickness.
 - 6. Header and jambs secured at corners by internal welding of faces or by welded splice plates, and further secured at webs by welding or mechanical interlock; exposed joints neat and tight.
 - 7. Provide continuous steel nailing flange at exterior side (no corner cutout at head/jamb intersection - flange to run continuous around corner).
 - 8. See Article "Finishing" for required moisture proofing/sound deadening coating.
 - 9. At joints of intersecting mullions, seal with 3M "Lightweight Body Filler" followed by 3M "Ultrapro MSP Sprayable Seam Sealer," or equal.
- E. Anchors:
 - 1. General:
 - a. Provide at 2'-0" maximum spacing.
 - b. Provide minimum 2 anchors at head of frames over 2'-6" wide, and minimum 4 anchors per door jamb. Bottom anchor shall be within 2 inches floor.
 - c. Anchors shall provide stiffness and rigidity to keep frames square, in accurate position without twisting, buckling or warping.
 - d. Position one jamb anchor above top butt reinforcement and one jamb anchor below bottom butt reinforcement.
 - e. At rated openings, anchors shall be UL approved for use on labeled frames.
 - 2. Anchor Types:
 - a. New Wall, Metal Framing:

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- 1) Steel Stud Anchors: 16 gauge (0.053 inch, 1.3mm) securely welded inside each jamb at interior side(s).
 - b. Other areas: As required for secure, installation as recommended by the HMMA.
- F. Moisture Proofing/Sound Deadening Coating:
 1. Exterior Frames and Frames Anchored to Masonry Walls: Coat inside (concealed) faces of pressed metal frames with fibered water based, asphalt emulsion similar to autobody undercoating.
 2. Apply over shop primer 1/8 inch thick and thoroughly dry before handling.
- G. Special Frames: 16 gauge (0.053 inch, 1.3 mm) with integral stop formed to cross section profile indicated.
 1. Provide muntins, mullions, and impose sections required, removable glazing stops or molding secured with tamper-proof oval head self-tapping screws set in countersunk holes at 12 inches on center.
 2. Weld corners of frame, grind smooth on exposed frames.
 3. Structure shall be adequate to withstand 25 lbs/sf wind load normal to glass surface.

2.9 FINISHING

- A. General:
 1. Prior to and after primer is applied, store and protect doors properly to prevent the possibility of rusting or moisture damage.
 2. Verify and coordinate primer compatibility with finish painting.
- B. Shop Painting:
 1. After fabrication, thoroughly clean surfaces of mill scale, rust, oil, grease, dirt, and other foreign matter, and chemically treat with phosphate compound so as to assure maximum paint adhesion.
 2. After pre-treatment of galvanized metal, apply shop coat of rust-inhibitive primer of even consistency in order to provide a uniformly finished surface, ready to receive finish painting.
 3. Finish shall comply with ANSI A250.10.
 4. Provide different colored shop primer to differentiate galvanized from non-galvanized products when delivered to Project site.
 5. Back coat frames with asphaltic emulsion wherever frames will be in contact with masonry.
- C. Doors and frames shall be re-primed on-site prior to finish painting specified in Section 09 9100, Painting.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- B. Do not install doors in frame openings that are not plumb, are out of tolerance for size or alignment, or would hinder door operation.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. Confirm that opening sizes and tolerances are acceptable and ready to receive this work.
- E. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 INSTALLATION - GENERAL

- A. Install metal doors and frames and accessories in conformance with reviewed Shop Drawings and manufacturer's data, and as specified herein.

3.3 INSTALLATION OF FRAMES

- A. Install frames in accordance with ANSI/SDI A250.11.
- B. Securely fasten frames to wall construction involved (wire anchors not acceptable).
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
 - a. In masonry construction, locate 4-wall anchors per jamb minimum or at 2'-0" on center maximum and aligned with hinge and strike locations. Coordinate installation of anchors and grouting of frames with other trades.
 - 2. At exterior wall locations where frame is installed in a wall with a concrete curb base, fill the bottom void of the frame with non-shrink grout to match the height of the concrete curb. Repair frame modifications to a blemish free new condition. Do not cut or modify the frame if it conflicts with the concrete curb. If concrete curb conflicts with frame, adjust or modify curb as required.
 - 3. Attach bottom anchors to concrete curb, where occurs, with drilled-in concrete anchors
 - 4. Attach to metal studs with 4 No. 12 sheet metal screws per anchor.
 - 5. Attach continuous nailing flange securely to wood studs with 4 No. 12 inches x 2 inches flat head wood screws per anchor. Attach anchor straps at interior side and interior straps with 4 10d ring shank nails per anchor.
 - 6. Seal perimeter of frames to fill space between frame and adjoining material. Seal exterior, exposed fastener heads to make waterproof. Sealant materials and application shall conform to applicable requirements of Section 07 9200, Joint Sealant.

7. When installing new frames in existing openings, remove existing finishes sufficiently to properly install and adequately fasten new frame. Prepare openings as required to receive new frame. Provide misc. shimming, blocking, backing, straps, etc. to fully prepare opening for new frame. Patch and repair surfaces when completed to match adjacent finishes.
- C. Grouting:
 1. Except for frames installed in metal and wood stud walls and existing walls, grout frames solid using mortar type grout only.
 2. Verify moisture proofing/sound deadening coating has been applied before proceeding.
- D. Install door flashing system components as described in this specification, indicated in Drawings and as recommended by the flashing manufacturer.
- E. Install fire-rated frames in accordance with NFPA Standard No. 80.

3.4 INSTALLATION OF DOORS

- A. Hang with clearances noted in Section 08 7100, Door Hardware, unless otherwise indicated or required for rated assemblies. Apply hardware in conformance with ANSI 250.08 and the manufacturer's written instructions.
- B. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.
- C. Do not erect members that are observed to be warped, bowed, deformed, or otherwise damaged or defaced to such extent as to impair strength or appearance. Remove and replace members that have been damaged in process of erection.
- D. Removable Glazing Stops: Install with tamperproof screws, with sealant at penetrations to pressed metal frame.
- E. Louvers: Install with tamperproof screws as provided by the manufacturer.
- F. Coordinate installation of hardware including installation of intrusion detection system components and wiring.
- G. Intrusion Coordination: Relocate wiring and provide new, compatible sensors in new doors as required for a fully operational system.
- H. Intrusion alarm: Coordinate wiring and sensor installation with electrical.

3.5 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, immediately make repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

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3.6 ADJUSTING

- A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Immediately prior to punch list walk-through, check and re-adjust operating finish hardware items, leaving metal doors and frames undamaged and in complete operating condition.

END OF SECTION

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Last Updated: January 7, 2022

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Exterior, insulated, overhead coiling doors.
 - 2. Non-insulated overhead coiling doors.
 - 3. Fire-rated overhead coiling doors.

1.2 RELATED REQUIREMENTS

- A. Section 08 7100, Door Hardware, for cylinder core and keys.
- B. Section 09 9100, Painting.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
 - 1. A 123/A 123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 2. A 653/A 653M: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. National Fire Protection Association(NFPA):
 - 1. NFPA 80: Standard for Fire Doors and Other Opening Protectives.
- E. Underwriters Laboratories (UL):
 - 1. UL 325: ANSI/CAN/UL Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.

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- B. Coordination: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices installed under other Sections.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit showing all parts, connections and anchorages, electrical requirements, adjacent materials, fully dimensioned and noted.
- B. Product Data: Submit list and complete descriptive data of all products proposed for use.
 - 1. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
 - 2. Include information on motor and controls.
- C. Samples:
 - 1. 12-inch length of each slat type and finish.
 - 2. Hardware and Fittings: As requested by the Architect.

1.6 INFORMATIONAL SUBMITTALS

- A. Statement of installer qualifications.
- B. Sample of manufacturer's warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Operation and Maintenance (O & M) Instructions: Submit for inclusion in O & M Manual.
- C. Certificate as specified in Part 3 verifying completion of training session for fire-rated doors by Owner's personnel.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Documented experience in installation of overhead doors and approved in writing by manufacturer.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Use materials and products of one manufacturer whenever possible.
- D. 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.

1.9 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.

1.10 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

1.11 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for each Type of overhead coiling door against defects in materials and workmanship for a period of 5 years.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Regulatory Requirements: Products requiring electrical connection shall be listed and classified by Underwriters Laboratories Inc. (UL) or other testing firm acceptable to the authority having jurisdiction as suitable for purpose specified and indicated.
- B. Side guides and anchorage shall be sufficient to retain curtain based on specified seismic requirements.
- C. Minor differences from specified components will be allowed as approved by the Architect.

2.2 INSULATED OVERHEAD COILING FIRE DOORS

- A. Product and Manufacturer: Cookson Model: ERD20 by CornellCookson, Inc. as specified and the basis of design, Overhead Door Corp., or equal.
 - 1. Mounting: Face of wall.
 - 2. Reset Operation: Motor operated.
- B. Rating: Rolling fire doors shall be constructed in accordance with testing agency requirements and shall bear a 3/4 hour rating label.
- C. Curtain:
 - 1. Slats: Type 5F; minimum 22 gauge Zinc coated (galvanized) by the hot-dip process, commercial quality, Grade 40, ASTM A 653.

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2. Finish: Manufacturer's pretreatment and primer and baked-on polyester powder finish coat; Cookson "SpectraShield," or equal.
 - a. Color: As selected by Architect from manufacturer's standard color range.
- D. Endlocks: High strength steel secured with two 1/4 inch rivets in accordance with UL requirements.
- E. Bottom Bar:
 1. Configuration: Two structural steel angles minimum 2" x 2" x 1/8".
 2. Finish: Manufacturer's corrosion inhibitive baked-on zinc enriched gray polyester powder coat to receive a field-applied finish coat as specified in Section 09 9100, Painting.
- F. Guides:
 1. Fabricate from minimum 3/16 inch structural steel angles bolted together with 3/8 inch fasteners to form a channel for the curtain to travel.
 2. Provide removable guide stoppers to prevent over travel of curtain and bottom bar.
 3. Top of coil side guide angles shall be removable for ease of curtain installation and as needed for future curtain service.
 4. Finish: Finish: Manufacturer's pretreatment and primer and baked-on polyester powder finish coat; Cookson "SpectraShield," or equal.
 - a. Color: As selected by Architect from manufacturer's standard color range.
- G. Counterbalance Assembly:
 1. Barrel: Minimum 6-inch diameter structural steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot of width.
 2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door and ensure that maximum effort to operate will not exceed 25 pounds. Provide exterior wheel for applying and adjusting spring torque.
- H. Brackets:
 1. Fabricate from minimum 3/16 inch thick steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures.
 2. Brackets shall be secured to the wall angle with minimum 1/2 inch fasteners.
 3. Finish: Finish: Manufacturer's pretreatment and primer and baked-on polyester powder finish coat; Cookson "SpectraShield," or equal.
 - a. Color: As selected by Architect from manufacturer's standard color range.
- I. Hood:
 1. Fabricate from minimum 24 gauge galvanized steel formed to fit the curvature of the brackets and with reinforced top and bottom edges.
 2. Provide minimum 1/4 inch steel intermediate support brackets.

3. Finish: Manufacturer's pretreatment and primer and baked-on white baked-on polyester finish coat; Cookson "GalvaNex," or equal. Hood to be field finish painted as specified in Section 09 9100, Painting, to match appearance of curtain slats.

J. Smoke Seals:

1. Bottom Bar: Combination smoke seal/sensing edge.
2. Guides and Head: Replaceable, UL listed, brush smoke seals sealing against fascia side of curtain.

K. Motor Operation:

1. Motor Operator: UL-listed, totally enclosed non ventilated motor in a NEMA Type 1 enclosure, removable without affecting the setting of limit switches; "AlarmGard Advanced" Fire Door Motor by Cookson, or equal.
 - a. Provide with thermal overload protection, planetary gear reduction, adjustable rotary limit switch mechanism and a transformer with 24V secondary output.
 - b. All internal electrical components are to be prewired to terminal blocks.
 - c. Horsepower: As recommended by manufacturer,
 - d. Power: 208/230V three phase service. Contractor to verify power requirements.
2. Additional Features and Requirements:
 - a. Provide an internal solenoid brake mechanism to hold the door at any position during normal door operation.
 - b. Equip operator with an emergency removable hand crank that provides emergency operation during non-alarm power failure.
 - c. Activate automatic closure shall be by notification from central alarm system.
 - d. Automatic closure shall be delayed for no more than ten seconds when electrically notified.
 - e. Automatic closure speed shall be controlled with a variable rate centrifugal governor without the use of electrical pulsation, oscillation type, or constant rate viscosity governors.
 - f. Automatic closure speed shall be maintained at an average of 12 inches per second.
 - g. Electrical sensing edge and push button control station shall be inoperable during automatic closure.
 - h. Door system shall be reset by reconnecting fusible links or by re-engaging failsafe release device from floor level.
 - i. Provide a minimum #50 roller chain for drive connection from operator output shaft to the door drive shaft.
 - j. System will not require manual resetting of spring tension or mechanical dropouts.
3. Isolation: Provide isolators for motor mounting to minimize transfer of vibration to structure.
4. Control Stations: 24 volt circuit.

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- a. Surface mounted: "Open/Close" key switch with "Stop" push button in a NEMA 1 enclosure.
 - b. Flush mounted: "Open/Close" key switch with "Stop" push button in a NEMA 1B enclosure.
 - c. Cylinders: Keyed into masterkey system; coordinate with Section 08 7100, Door Hardware.
- 5. Safety Device:
 - a. Provide only a wireless sensing edge connection to motor operator.
 - b. Electric coiling cords or take-up reels are not allowed to connect bottom sensing edge to motor.
- L. Accessories:
 - 1. Locking: Masterkeyable cylinder operable from both sides of bottom bar. Provide with interlock switches with motor.]
 - 2. Battery back-up to prevent gravity closure for a minimum of four hours due to power failure; Cookson Model R-BBU, or equal.
 - 3. ADA compliant horn/strobe fire emergency annunciator to give advanced warning that fire shutter is about to close, activating warning signal upon alarm.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to installation of this work, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until all such discrepancies have been fully resolved.

3.2 INSTALLATION

- A. Install items where indicated on the Drawings and in full accord with Shop Drawings and the manufacturer's recommendations, anchoring all components firmly in place.
- B. Install motor operator according to UL 325 and governing code.
 - 1. Materials shall be UL listed.
 - 2. Coordinate with electrical Section of these Specifications for proper interface with electrical operators and controls and intrusion alarm contacts.
- C. Fit, align and adjust door assemblies level and plumb; provide smooth operation.
- D. Erection Tolerances:
 - 1. Maintain dimensional tolerances and alignment with adjacent work.
 - 2. Maximum Variation from Plumb: 1/16 inch.

- 3. Maximum Variation from Level: 1/16 inch.
- 4. Longitudinal or Diagonal Warp: 1/8 inch per 10-foot straightedge.

3.3 ADJUSTING AND CLEANING

- A. Adjust all rollers, motors, tracks and back-up chain hoist or crank for smooth, non-binding operation.
- B. Clean and touch-up factory finished surfaces.

3.4 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.

3.5 FIELD QUALITY CONTROL

- A. Drop test and reset fire door system twice by all means of activation and comply fully with NFPA 80 Section 5. Coordinate with authorities having jurisdiction to witness test and sign Drop Test Form.

3.6 DEMONSTRATION AND TRAINING

- A. Contractor shall provide a onetime training session on the proper procedure for resetting fire rated doors after fire testing to Owner's personnel at a time designated by the Owner.
- B. Upon completion of the training, provide a certificate which includes a description of the type of training, name of company and person providing the training, the date, and those district personnel attending the training session. Submit this document along with the O & M Manual.

END OF SECTION

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SECTION 08 71 00 – DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.
 - 1. Division 08: Section - Hollow Metal Doors and Frames.
 - 2. Division 08: Section - Flush Wood Doors.
 - 3. Division 08: Section - Aluminum-Framed Storefronts.

1.03 REFERENCES

- A. 2022 California Building Code, CCR Title 24, Part 2
- B. BHMA - Builders' Hardware Manufacturers Association
- C. DHI - Door and Hardware Institute
- D. NFPA - National Fire Protection Association.
 - 1. NFPA 80 - Fire Doors and Other Opening Protectives
 - 2. NFPA 105 - Smoke and Draft Control Door Assemblies
- E. UL - Underwriters Laboratories.
 - 1. UL 10C - Fire Tests of Door Assemblies
 - 2. UL 305 - Panic Hardware
- F. WHI - Warnock Hersey Incorporated
- G. SDI - Steel Door Institute

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1.04 SUBMITTALS & SUBSTITUTIONS

- A. General: Submit in accordance with Conditions of the Contract and Division 01 Specification sections.
- B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Submit electronic PDF copies of schedule organized vertically into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
1. Include a Cover Sheet with:
 - a. Job Name, location, telephone number.
 - b. Architects name, location and telephone number.
 - c. Contractors name, location, telephone number and job number.
 - d. Suppliers name, location, telephone number and job number.
 - e. Hardware consultant's name, location and telephone number.
 2. Job Index information included:
 - a. Numerical door number index including; door number, hardware heading number and page number.
 - b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
 - c. Manufacturers' names and abbreviations for all materials.
 - d. Explanation of abbreviations, symbols, and codes used in the schedule.
 - e. Mounting locations for hardware.
 - f. Clarification statements or questions.
 - g. Catalog cuts and manufacturer's technical data and instructions.
 3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number - HW Group #1)				
(a) 1 Single - Door #101 - Corridor 101 to Exterior			(b) 90°	(c) RH
(d) 3'-0" x 7'-0" x 1-3/4" - Wood Door x Hollow Metal Frame - 20 Minute				
(e) 1.	(f) 3 ea	(g) Hinges - (h) 5BB1 4.5 x 4.5 NRP TMS	(i) 1/2 TMS	(j) 630 (k) IVE
2.	1 ea	Lockset - ND80P6D x RHO x RH x 10-025 x JTMS	626	SCH
3.	1 ea	Closer - 4040XP x EDA x TBSRT	689	LCN

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- a) Single or pair of doors with opening number and location.
 - b) Degree of opening.
 - c) Hand of door(s).
 - d) Door/frame dimensions and material; Label requirements, if any.
 - e) Hardware item line # (Optional).
 - f) Quantity.
 - g) Product description.
 - h) Product part number.
 - i) Fastenings and other pertinent information.
 - j) Hardware finish codes per ANSI/BHMA A156.18.
 - k) Manufacturer abbreviation.
- D. Make substitution requests in accordance with Division 01. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.
- E. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- G. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.
- H. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.
- 1.05 QUALITY ASSURANCE
- A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.
- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
1. Responsible for detailing, scheduling and ordering of finish hardware.

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2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing. To maintain the integrity of patented key systems provide a letter of authorization from the specified manufacturer indicating that supplier has authorization to purchase the key system directly from the manufacturer.
 3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.
- C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.
1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".
- E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
- F. Product packaging to be labelled in compliance with CA Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986.
- 1.06 DELIVERY, STORAGE AND HANDLING
- A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.
 - B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.
 - C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.
 - D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.
- 1.07 WARRANTY
- A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:

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1. Locksets: Ten (10) years.
2. Exit devices: Three (3) years.
3. Closers: Thirty (30) years.
4. All other hardware: Two (2) years.

1.08 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.09 PRE-INSTALLATION CONFERENCE

- A. Convene a pre-installation conference at least one week prior to beginning work of this section.
- B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key Owner's Personnel, and Project Inspector.
- C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review Owner's keying standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

<u>Item</u>	<u>Manufacturer</u>	<u>Acceptable Substitutes</u>
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	None – District Standard
Closers	LCN	None – District Standard
Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.02 MATERIALS

- A. Hinges:
 1. Provide hinges conforming to ANSI/BHMA A156.1.
 2. Hinges shall be sized in accordance with the following:
 - a. Height:
 - 1) Doors up to 42" wide: 4-1/2 inches.
 - 2) Doors 43" to 48" wide: 5 inches.

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- b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
 - c. Number of Hinges: Provide 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.
 - 3. Exterior out-swinging hinges shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.
 - 4. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.
- B. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Rhodes" lever design.
- 1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3 hour fire doors.
 - 2. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
 - a. Abusive locked lever torque – minimum 3,100 inch-pounds without gaining access.
 - b. Offset lever pull – minimum 1,600 foot pounds without gaining access.
 - c. Vertical lever impact – minimum 100 impacts without gaining access.
 - d. Cycle Test – tested to minimum 16 million cycles with no visible lever sag; without the use of performance aids such as set screws or spacers.
 - 3. Cylinders: Refer to "KEYING" article, herein.
 - 4. Provide locks with standard 2-3/4" backset, unless noted otherwise, with 1/2" latch throw. Provide proper latch throw for UL listing at pairs.
 - 5. Provide locksets with separate solid steel anti-rotation thru-bolts, and no exposed screws.
 - 6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
 - 7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
 - 8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
 - 9. Provide levers with vandal resistant technology as scheduled for use at abusive applications.
- C. Closers: LCN as scheduled.
- 1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
 - 2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
 - 3. Provide certificate by independent testing laboratory that door closers have completed over 10,000,000 cycles and can still meet ANSI/BHMA A156.4 standards.

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4. Cylinder Body: 1-1/2" diameter with 3/4" diameter double heat-treated pinion journal.
5. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120° F to -30° F.
6. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
7. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
8. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
9. Pressure Relief Valve (PRV) Technology: Not permitted.
10. Provide door closers powder coated to match balance of door hardware. Powder coating finish shall be certified to exceed 100 hours salt spray testing as described in ANSI/BHMA A156.4 and ASTM B117.
11. Provide special rust inhibitor (SRI) in highly corrosive areas, and where noted in hardware sets.
12. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

D. Door Stops/Holders

1. Unless otherwise noted in hardware sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Provide backing plate at wall framing behind wall type.
4. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions. Stop-only function shall be provided at fire-rated openings.
5. Mount door stops/holders at single height.
6. Align adjacent stops/closers at double doors.
7. Provide matching floor or wall stops/holders at double doors, unless otherwise indicated.
8. Provide risers for floor mounted door stops/holder as required
9. Mechanical door holder not allowed at door leaves with auto operators.

E. Protection Plates:

1. Provide kick, mop, and/or armor plates minimum of 0.050" thick, with four beveled edges. Furnish with sheet metal or wood screws, finished to match plates.
2. Kick plates shall be sized 10" high and 2" less door width (LDW) at single doors and 10" high and 1" LDW at pairs or doors.
3. Provide mop and armor plates with sizes as scheduled in hardware sets.

F. Thresholds: As scheduled and per details.

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1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope. Thresholds shall comply with CBC Section 11B-404.2.5.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 07 "Thermal and Moisture Protection".
3. Use 1/4" fasteners, red-head flat-head sleeve anchors (SS/FHSL).

G. Seals: Provide silicone gasket at all rated and exterior doors.

1. Smoke & Draft Control Doors: Provide UL10C Classified gasketing that complies with NFPA 80 & NFPA 252 for use on "S" labeled Positive Pressure door assemblies.

H. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.03 KEYING

A. Furnish a Proprietary Schlage masterkey system as directed by the owner or architect. Key system to be designated and combined by the Schlage Master Key Department even if pinned by the Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.

B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of Allegion or an Authorized Key Center or Authorized Security Center. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.

C. Extend the original Schlage masterkey system established for the project.

D. Furnish all cylinders in the Schlage Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI)

E. Furnish construction keying for doors requiring locking during construction.

1. For FSIC systems provide 23-030-ICX Full Size Construction Cores
2. For FSIC systems provide ten 48-101-ICX Construction Keys
3. For FSIC systems provide two 48-056-ICX Control Keys (const.)
4. For FSIC systems provide two control keys for installing the permanent cores (49-056 for "Classic" keyways, 48-052-XP for "Classic Primus") (49-003 for "Everest Conventional", 48-005-XP for "Everest Primus")

F. Furnish all keys with visual key control. (Not all options listed below are available at the same time.)

1. Stamp key "Do Not Duplicate".
2. Stamp (BHMA) key symbol on key.

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- G. Furnish all cylinders with visual key control. (Not all options listed below are available at the same time.)
 - 1. Stamp (BHMA) key symbol on side of cylinder (CKC).
- H. Furnish mechanical keys as follows:
 - 1. Furnish 2 cut change keys for each different change key code.
 - 2. Furnish 1 uncut key blank for each change key code.
 - 3. Furnish 6 cut masterkeys for each different masterkey set.
 - 4. Furnish 3 uncut key blanks for each masterkey set.
 - 5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
 - 6. Furnish 1 cut control key cut to each SKD combination.
 - 7. Furnish KS43D2200 padlock for use with non-I/C Schlage cylinders. Furnish 47-413 (conventional) or 47-743-XP (PrimusXP) with above.
 - 8. Furnish KS43G3200 padlock for use with FSIC Schlage cylinders. Furnish 23-030 (Classic / Everest) or 20-740 (PrimusXP) with above.
 - 9. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.

2.04 FINISHES

- A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.
- B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.
- C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.
- D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.05 FASTENERS

- A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.
- B. Screws for butt hinges shall be flathead, countersunk, full-thread type.
- C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.
- D. Provide expansion anchors for attaching hardware items to concrete or masonry.
- E. All exposed fasteners shall have a phillips head.

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- F. Finish of exposed screws to match surface finish of hardware or other adjacent work.
- G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.
- C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2016 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.
- B. Use the templates provided by hardware item manufacturer.
- C. Mounting heights for hardware shall be as recommended by DHI. Operating hardware shall be located between 34" and 44" above finish floor to comply with CBC Section 11B-404.2.7.
- D. Door Closers:
 - 1. Place door closers inside building, stairs, rooms, etc. Closers shall be installed to permit doors to swing 180 degrees or maximum allowable by conditions.
 - 2. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors.
 - 3. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal.

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4. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.
 5. Compensating devices or automatic door operators may be utilized to meet the above standards.
 6. Per CBC Section 11B-404.2.8.1, doors shall take minimum of 5 seconds to move from an open position of 90 degrees to 12 degrees to the latch jamb.
- E. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- G. Set thresholds for exterior doors in full bed of butyl-rubber sealant.
- H. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

3.03 ADJUST AND CLEAN

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surface soiled by hardware installation.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.
- E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

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3.04 HARDWARE LOCATIONS

- A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

- A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.06 HARDWARE SCHEDULE

- A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.
- B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.
- C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Abbreviation	Name
IVE	H.B. Ives
LCN	LCN Commercial Division
SCH	Schlage Lock Company
ZER	Zero International Inc

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GROUP NO. 1

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	FLOOR STOP	FS439	US26D	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR BOTTOM	355AA	AA	ZER

GROUP NO. 2

1	EA	I/C HOUSING	TYPE AS REQUIRED	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	FSIC CORE	23-030 ICX	ORG	SCH
			BALANCE OF HARDWARE BY ROLL UP DOOR MFR		

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Glass and glazing for the following:
 - 1. Interior applications.
 - 2. Fire-protection glazing at locations indicated and as required by prevailing codes.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Pertinent Division 08 Sections specifying doors, windows, curtainwalls and storefront requiring glazing.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- C. American Architectural Manufacturers Association (AAMA) Publications:
 - 1. AAMA 800-16, Voluntary Specifications and Test Methods for Sealants.
- D. American National Standards Institute (ANSI) Publications:
 - 1. ANSI/AAMA 101, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
 - 2. ANSI Z97.1, American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
- E. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7, Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
- F. ASTM International:
 - 1. C920: Standard Specification for Elastomeric Joint Sealants.
 - 2. C1021: Standard Practice for Laboratories Engaged in Testing of Building Sealants.

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3. C1036: Standard Specification for Flat Glass.
 4. C1048: Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
 5. C1172: Standard Specification for Laminated Architectural Flat Glass.
 6. C1376: Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.
 7. C1503: Standard Specification for Silvered Flat Glass Mirror.
 8. E90: Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 9. E1300: Standard Practice for Determining Load Resistance of Glass in Buildings.
- G. Consumer Product Safety Commission (CPSC) Publications:
1. 16 CFR 1201, Safety Standard for Architectural Glazing Materials.
- H. Glass Association of North America (GANA)
1. GANA Glazing Manual.
 2. GANA Laminated Glass Design Guide.
 3. FGMA Sealant Manual.
- I. Insulating Glass Manufacturers Alliance (IGMA) Publications:
1. SIGMA TM-3000, Glazing Guidelines for Sealed Insulating Glass Units.
- J. National Fenestration Rating Council (NFRC):
1. NFRC 100, Procedure for Determining Fenestration Product U-Factors.
 2. NFRC 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
 3. NFRC 300, Procedure for Determining Solar Optical Properties for Simple Fenestration Products.
- K. National Fire Protection Association (NFPA):
1. NFPA 252, Standard Methods of Fire Tests of Door Assemblies.
 2. NFPA 257, Standard on Fire Test for Window and Glass Block Assemblies.
- L. National Glass Association (NGA):
1. Glazier Certification Program
- M. Underwriter's Laboratories, Inc. (UL) Standards:
1. UL 9, Standard for Fire Tests of Window Assemblies.
 2. UL 10B, Standard for Fire Tests of Door Assemblies.
 3. UL 10C, Standard for Positive Pressure Fire Tests of Door Assemblies.

1.4 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C1036.
- C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.
- D. Safety Glazing: Safety glazing material, usually tempered glass or laminated glass, is manufactured to reduce the risk of human injury due to jagged sharp pieces during breakage. In tempered glass this is accomplished by the characteristic break pattern of many smaller pieces, and in laminated glass by the adhesion of the glass pieces to an inner plastic layer.
- E. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.
- F. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
- G. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
- H. Defective Fire Protection Glass: Defects that are attributed to the manufacturing process and not to causes contrary to normal conditions of use. Defects include crazing, delaminating or peeling.
- I. Glazing Units Surfaces:
 - 1. Insulated Units:
 - a. Side 1: Exterior surface of outer lite.
 - b. Side 2: Interior surface of outer lite.
 - c. Side 3: Interior surface of inner lite.
 - d. Side 4: Exterior surface of inner lite
 - 2. Laminated Units:
 - a. Side 1: Top surface of top outer pane in horizontal orientation.

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- b. Interlayer: Laminating material between two pieces of monolithic glass.
- c. Side 2: Underside of bottom outer pane in horizontal orientation.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Pre-Installation Meetings: Conduct at Project site.
 - 1. Review temporary protection requirements for glazing during and after installation.
 - 2. In addition, attendance is required at preconstruction meetings specified in related Sections.
- C. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.6 ACTION SUBMITTALS

- A. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- B. Product Data: For each type of product indicated, demonstrate compliance with specified attributes.
 - 1. Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
- C. Samples:
 - 1. Glass:
 - a. 12 -inch square samples of each type of glass indicated except for clear single pane units.
 - b. Thickness of tinted-glass samples shall be representative of thickness intended for installation.
 - c. Samples of insulating glass shall be constructed from same material and by method as to be installed in Project.
 - 2. Sealants and Gaskets:
 - a. 12 -inch samples of each color required (except black) for each type of sealant or gasket exposed to view.
 - b. Install sealant or gasket sample between two strips of material representative of adjoining framing system in color.

- c. Sample requirement may be waived by the Architect at their discretion.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
 - 1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.
 - 2. For fire-protection-rated glazing, provide Certificates of Compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project comply with specified requirements. Include a list of special or proprietary accessories necessary to meet these requirements.
- B. Product Test Reports: Tests performed by a qualified testing agency for each of the following types of glazing products if not included as part of the Product Data submittal:
 - 1. Glazing sealants.
 - 2. Glazing gaskets.
 - 3. Fire-rated glass.
- C. Qualification Data: Submit for the following.
 - 1. Installer.
 - 2. Manufacturers of insulating-glass units with sputter-coated, low-E coatings if other than one of the listed manufacturers.
 - 3. Glass testing agency.
 - 4. Sealant testing agency.
- D. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
- E. Sample of manufacturer's warranty.
- F. Record of Pre-installation meeting.

1.8 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranties and Subcontractor's guarantee.
- B. Maintenance Data: For glass, to include in maintenance manuals.

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1.9 QUALITY ASSURANCE

- A. 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.
- B. Qualifications:
 - 1. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
 - 2. Glass Installer: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).
- C. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.
 - 1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated.
- D. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
 - 1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.
 - 2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C920, and where applicable, to other standard test methods.
- E. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201.
- F. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: GANA Laminated Division's "Laminated Glass Design Guide" and GANA's "Glazing Manual."
 - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."
- G. Certifications:
 - 1. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of one of the following testing and inspecting agencies:

- a. Insulating Glass Certification Council.
- b. Associated Laboratories, Inc.
2. Fire-Rated Glazing Certification: Glazing materials bearing manufacturer's permanent label representing a quality control program involving a recognized certification agency or independent testing laboratory acceptable to Authority Having Jurisdiction, and designating type and thickness of glass.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver glass with manufacturer's label indicating type, quality, and thickness on each piece.
- B. Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.
- C. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.11 FIELD CONDITIONS

- A. Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.
 1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 degrees F.

1.12 WARRANTY

- A. General:
 1. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for each type of glazing.
 2. Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.
 3. Material shall be free from manufacturer defects and installation workmanship. Any material or workmanship judged to be defective shall be replaced at no cost to the Owner.
- B. Fire Protection Rated Glass: Manufacturer's standard form, made out to Owner and signed by fire protection glass manufacturer, agreeing to replace fire protection glass units that are defective as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.
 1. Warranty Period: 5 years.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: Defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
 - 1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E1300, according to the following requirements:
 - a. Specified Design Wind Loads: As indicated on structural drawings, but not less than wind loads applicable to Project as required by ASCE 7, Minimum Design Loads for Buildings and Other Structures: Chapter 30, Wind Loads: Components and Cladding.
 - b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
 - 1) Load Duration: 3 seconds.
 - c. Probability of Breakage for Sloped Glazing: 1 break per 1000 for glass installed 15 degrees or more from the vertical plane and under action of wind and/or snow.
 - d. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch, whichever is less.
 - 1) For monolithic-glass lites heat treated to resist wind loads.
 - 2) For insulating glass.
 - 3) For laminated-glass lites.
- C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:
 - 1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick.

2. For laminated-glass lites, properties are based on products of construction indicated.
 3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 4. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:
 - a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x degrees F.
 - b. Solar Heat Gain Coefficient: NFRC 200.
 - c. Solar Optical Properties: NFRC 300.
- E. Source Limitations: Obtain glass, glazing materials and accessories from one source for each product indicated. Coatings and finished assemblies, such as insulating units and laminated units, to be manufactured by the same fabricator with a common source of warranty.
- F. Sustainable Design:
1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.2 ACCEPTABLE GLASS MANUFACTURERS AND FABRICATORS

- A. Acceptable Glass Manufacturers: The following, or equal.
1. Vitro Architectural Glass, 412.820.8500, www.vitroglazings.com.
 2. Pilkington North America, 800-221-0444, www.pilkington.com.
 3. AGC Flat Glass North America, 800-251-0441, www.us.agc.com.
 4. Guardian Industries, 248-340-1800, www.guardianglass.com.
- B. Acceptable Glass Fabricators: Manufacturers listed above, the following, or equal.
1. Northwestern Industries, 800-426-2771, www.nwiglass.com.
 2. Oldcastle BuildingEnvelope, 866-653-2278, www.obe.com.

2.3 GLASS MATERIALS

- A. Annealed Float Glass: ASTM C1036, Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select) or better.
- B. Heat-Treated Float Glass: ASTM C1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
1. Provide Kind HS (heat-strengthened) float glass in place of annealed float glass where required to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Article "Design and Performance Criteria."
 2. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass to comply with glass design requirements specified in

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Article "Design and Performance Criteria," such as increased strength, or as safety glazing where laminated glass does not meet other performance criteria.

- C. Spectrally Selective Glass: ASTM C1376, float glass with metallic-oxide or -nitride coating deposited by magnetically sputtered vacuum deposition (MSVD) process after manufacture and heat treatment (if any), and complying with other requirements specified.

1. Edge Deletion:
 - a. When Low-e coatings are used within an insulating unit, delete coating at edge to completely seal the coating within the unit.
 - b. Edge deletion to be uniform in appearance (visually straight) and remove 95 percent of the coating.
2. Low E Coating: As specified in Article "Glazing Schedule."

- D. Fire-Protective Glass:

1. General:
 - a. Glass shall be classified and rated by Underwriters Laboratories, Inc. or Intertek/Warnock-Hersey, Inc. in accordance with NFPA 252 or UL 10B or UL 10C as applicable to the specified label marking.
 - b. Glass shall be labeled for fire protection rating in accordance with CBC Section 716.1.2.2 requirements for identification.
 - c. Glass shall meet specified safety glazing requirements.
 - d. Required CBC Marking: D (no hose stream test).
 - e. Rating: 45 minutes.
2. Manufacturer and Product: One of the following, or equal.
 - a. "SuperLite I" by SAFTI*First*, a Division of O'Keeffe's Inc., 888-653-3333.
 - 1) Thickness: 1/4 inch (6mm).
 - b. "Fireglass 20" by Technical Glass Products (TGP), 800-426-0729.
 - 1) Thickness: 1/4 inch (6mm).

- E. Fire-Protective Glass:

1. General:
 - a. Glass shall be classified and rated by Underwriters Laboratories, Inc. or Intertek/Warnock-Hersey, Inc. in accordance with NFPA 252 or UL 10B or UL 10C as applicable to the specified label marking.
 - b. Glass shall be labeled for fire protection rating in accordance with CBC Section 716.1.2.2 requirements for identification.
 - c. Glass shall meet specified safety glazing requirements.
 - d. Rating: As scheduled on the drawings.
2. Manufacturer and Product: One of the following, or equal.
 - a. "SuperLite I-XL" by SAFTI*First*, a Division of O'Keeffe's Inc., 888-653-3333.
 - 1) Thickness: 1/4 inch (6mm).
 - b. "FireLite Plus" by Technical Glass Products (TGP), 800-426-0729.

- 1) Thickness: 5/16 inch (8mm).
- 2) Surface Grade: Premium.

2.4 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES

- A. General: Provide products of type indicated and complying with the following requirements:
1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
 2. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.
 3. Elastomeric Sealant Standard: Manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C920 requirements, including those for Type, Grade, Class and Uses.
 4. Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.
- B. Preformed Butyl-Polyisobutylene Glazing Tape: Manufacturer's standard solvent-free formulation with a solids content of 100 percent; complying with AAMA 800-16; in extruded tape form; non-staining and non-migrating in contact with nonporous surfaces; packaged on rolls with a release paper on one side; with or without continuous spacer rod as recommended by manufacturers of tape and glass for application indicated.
- C. Elastomeric Glazing Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.
1. Neutral-Curing Silicone Glazing Sealants: "SilPruf SCS2000" by GE Construction Sealants, "864" or "890" by Pecora Corporation, or equal.
 - a. Type and Grade: S (single component) and NS (nonsag).
 - b. Class: 50.
 - c. Use Related to Exposure: NT (nontraffic).
 - d. Uses Related to Glazing Substrates: M, G, A, and, as applicable to glazing substrates, Use O.
 - e. Applications: Vertical glazing applications as recommended by manufacturer where wet seal is preferred over gaskets.

2.5 ADDITIONAL GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

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- B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer, meeting requirements of VOC limits specified in related Sections.
- C. Spacers, Edge Blocks and Setting Blocks: 100 percent silicone blocks, 80 to 90 Shore A durometer hardness, limit lateral movement (side-walking) of glass.
- D. Compressible Filler Rods: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.

2.6 FABRICATION

- A. Tempered Glass:
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed.
 - 2. Roll-Wave Distortion: Maximum peak-to-valley roll-wave 0.003 inch in the central area and 0.008 inch within 10.5 inches of the leading and trailing edge.
 - 3. For clear or low-iron glass 1/4 inch to 3/8 inch thick without ceramic frit or ink, maximum + or – 100 mD (millidiopter) over 95 percent of the glass surface.
 - 4. Maximum bow and warp 1/32 inch per lineal foot.
 - 5. For uncoated glass, comply with requirements for Condition A.
 - 6. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
 - 7. All tempered glass shall conform to ANSI Z97.1, and Federal Standard CPSC 16 CFR 1201. Tempered glass shall bear permanent monogram indicating tempered quality. Fabrication marks on tempered glass shall be located to be concealed in completed installation.
- B. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- C. Factory-label each pane of glass. Do not remove labels until final acceptance is obtained.
- D. Edge Treatment:
 - 1. Edges for glass at architectural woodwork items shall be flat polished.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing for glazing, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.

2. Presence and functioning of weep system.
 3. Minimum required face or edge clearances.
 4. Effective sealing between joints of glass-framing members.
- B. Obtain installers written report listing conditions detrimental to performance of glazing work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.3 GLAZING INSTALLATION

- A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.
- B. Glazing channel dimensions shall provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass from edge damage during handling and installation:
1. Use a rolling block in rotating glass units to prevent damage to glass corners.
 2. Do not impact glass with metal framing.
 3. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar.
 4. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening.
 5. Discard glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- E. Anchor components securely in place in the manner indicated. Shim and allow for movement resulting from changes in thermal conditions. Provide separators and isolators to prevent corrosion, electrolytic deterioration, and "freeze-up" of moving joints.
- F. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- G. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- H. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:

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1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 2. Provide 1/8 inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- I. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
 - J. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
 1. Avoid point loading of glass.
 2. Do not field-cut glass.

3.4 SEALANT GLAZING

- A. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 DEFECTIVE WORK

- A. Repair damaged and defective work and eliminate functional and visual defects. Where repair is not possible replace work.

3.6 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

- D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.
- E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion.

3.7 GLAZING SCHEDULE

- A. General: Provide safety glazing (fully tempered Type FT or laminated glazing) at locations where required by code or design criteria. Locations as indicated on Drawings.
- B. GL-1: NOT USED
- C. GL-1a: NOT USED
- D. GL-2: NOT USED
- E. GL-2a: NOT USED
- F. GL-2b: NOT USED
- G. GL-3: NOT USED
- H. GL-3a: NOT USED
- I. GL-4: NOT USED
- J. GL-5: NOT USED
- K. GL-6: NOT USED
- L. GL-7: NOT USED
- M. GL-8: Fire protective glass; as specified.
- N. GL-9: NOT USED
- O. GL-10: NOT USED

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Gypsum board, including finishing.
 - 2. Metal accessories.
 - 3. Fiberboard backing panel for field-fabricated fabric-wrapped wall panels.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 07 9200, Joint Sealants.
- D. Section 08 1113, Hollow Metal Doors and Frames.
- E. Section 09 2116, Gypsum Board Shaft-Wall Assemblies.
- F. Section 09 5113, Acoustical Panel Ceilings.
- G. Section 09 7200, Wall Coverings; wall covering for field fabricated, fabric-wrapped panels.
- H. Section 09 9100, Painting.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
 - 1. C11: Standard Terminology Relating to Gypsum and related Building Materials and Systems.
 - 2. C473: Standard Test Methods for Physical Testing of Gypsum Panel Products.
 - 3. C475/C475M: Specification for Joint Treatment Materials for Gypsum Wallboard Construction.
 - 4. C557: Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - 5. C840: Standard Specification for Application and Finish of Gypsum Board.

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6. C1047: Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
7. C1177/C1177M: Specification for Joint Treatment Materials for Gypsum Wallboard Construction.
8. C1396: "Specification for Gypsum Board.
9. C1629/C1629M: Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
10. D3273: Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
11. E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
12. E119: Method for Fire Tests of Building Construction and Materials.

D. Gypsum Association (GA):

1. GA-600: Gypsum Fire Resistance Design Manual.
2. GA-214: Recommended Levels of Finish for Gypsum Board, Glass Mat & Fiber-Reinforced Gypsum Panels.
3. GA-216: Application and Finishing of Gypsum Panel Products.

E. Underwriters Laboratories (UL): Fire Resistance Directory.

1.4 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C11 for definitions of terms for gypsum board construction not defined in this Section or in other referenced standards.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:

1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

- B. Coordinate work to avoid delays and interference with work of mechanical, electrical and other trades.

1.6 ACTION SUBMITTALS

- A. Product 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.
- B. Samples: Submit sample for each type of finish texture to Architect for review.

1.7 INFORMATIONAL SUBMITTALS

- A. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
 - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
- B. Statement of installer qualifications, if requested by Architect.

1.8 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Use materials and products of one manufacturer whenever possible.
- C. 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.
- D. Workmanship shall be of highest quality. Joints, corners, screws and nail heads shall be finished with long tapered finish, smooth and even in texture. Surfaces shall be prepared to receive paint finish.

1.9 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. Materials are to be neatly stacked flat, avoiding undue sag or damaged to board surfaces or edges.

1.10 FIELD CONDITIONS

- A. Do not install wallboard or joint compounds when building temperature is below 55 degrees F or if proper ventilation is not provided to eliminate excessive moisture from building.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and install wallboard assembly identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. Sustainable Design:
 - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
 - 2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.2 INTERIOR GYPSUM BOARD PANELS

- A. Gypsum Wallboard: ASTM C1396 Type "X" fire rated with UL label; USG "Sheetrock Firecode," Georgia-Pacific "Fireguard Gypsum Board Type X", National Gypsum "Board Gold Bond Fire-Shield," or equal.
 - 1. Thickness: 5/8 inch unless otherwise shown.
 - 2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
 - 3. Locations of Use: Walls except as otherwise noted.
- B. Impact and Mold Resistant Gypsum Wallboard: ASTM C1629 and ASTM E119, Type "X" fire rated with UL label; USG "Mold Tough VHI Firecode Core Panels," National Gypsum "Hi-impact XP," and CertainTeed "AirRenew Extreme Impact with M2Tech," or equal.
 - 1. Thickness: 5/8 inch unless otherwise shown.
 - 2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.

2.3 SPECIALTY PANELS

- A. Fiberboard: Calendered clay coated, ironed surface, wax impregnated wood fiber panels; "SmartCore" Industrial Fiberboard as manufactured by Building Products of Canada, or equal.
 - 1. Thickness: 1/2 inch.
 - 2. Flammability: Class B in accordance with ASTM E84.
 - a. Flame Spread Index: Less than 75.
 - b. Smoke Developed Index: Less than 440.

2.4 ACCESSORIES

- A. Concealed Metal Accessories: Electrogalvanized, conforming to ASTM C1047.
 - 1. Corner Beads: 1-1/4 inch x 1-1/4 inch Cornerbead by Clinch-On Cornerbead Company, or equal, size.

2. Casing Bead: USG Series No. 200-B, or accepted qual.
3. Exposed Edge Trim: USG Series No. 200-A with back flange or equal.
4. Metal Furring Channels: USG Metal Furring Channels, Dale FC-7/8, Gold Bond Furring Channel or equal 7/8 inch deep x 1-1/4 inch face width resilient metal furring channel.
5. Expansion Joint: USG No. 093 Control Joint, Gold Bond E-Z Expansion Joint, or equivalent product by Beadex, Domtar, or equal.
6. Others as indicated on the Drawings and as recommended by reference standards.

B. Fasteners:

1. Screws:
 - a. Gypsum wallboard to wood, use 1-1/4 inch length, bugle head. Second layer of gypsum wallboard to wood use 2 inch length.
 - b. Gypsum wallboard to metal studs or furring channels, use 1 inch length Hi-Lo type S, bugle head for 20 gauge or less and 1-1/8 inch length Hi-Lo type S, bugle head for studs greater than 20 gauge. Second layer of gypsum wallboard to metal studs or furring channels use 2 inch length.
2. Other fastener types as required and recommended by gypsum wallboard manufacturer, applicable CBC requirements, and in accordance with the specified standards.
3. Spacing shall be in accordance with the CBC.

C. Joint System Materials: Conform to ASTM C475.

1. Tape: USG Sheetrock Brand Joint Tape, or equal.
2. Joint compound: USG Sheetrock Brand Joint Compound - Taping, or equal.
3. Joint finishing compound: USG Sheetrock Brand Joint Compound - Topping, or equal.

D. Sealants:

1. Interior Wall Sealant: Highly elastic, water-based compound, non-bleeding, non-staining, pumpable and easily applied in beads, and specifically formulated for acoustical sealing; Tremco Acoustical Sealant, Presstite 579.64; or equal.
2. Acoustical Sealants:
 - a. Non-Rated Conditions: USG "Sheetrock Acoustical Sealant," Tremco "Acoustical Sealant," Henry's "Sound Control Sealant" No. 413, or equal conforming to ASTM C919 or equivalent.
 - b. Fire-Rated Partition Perimeter Conditions: USG "Sheetrock Acoustical Sealant," Jaco "Fire and Draft Sealer," or equal.

E. Adhesives:

1. Laminating Adhesive: As recommended by gypsum board manufacturer for laminating gypsum board together in fire-rated construction.
2. Application to Wood Framing: Certified in accordance with ASTM C557.

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- 3. Adhesives shall comply with required VOC regulations.
- F. Primer/sealer: As specified in Section 09 9100, Painting.
- G. Spray-on Texture Coating: USG "Texture XII Drywall Surfacers," or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Check framing for accurate spacing and alignment. Surfaces shall be checked for surface damage, defects or uneven walls. Uneven walls shall mean those that are not straight, plumb or of even true plane
- B. Verify that spacing of installed framing does not exceed maximum allowable for thickness of gypsum board to be used.
- C. Unacceptable conditions shall be corrected prior to application gypsum board.

3.2 INSTALLATION OF GYPSUM BOARD

- A. General: Comply with ASTM C840, GA-216, and CBC. Where UL designs are indicated on the Drawings for fire-rated partitions, comply with UL requirements, except where exceeded by other requirements.
- B. Board Arrangement Layout: Conform to layouts and requirements indicated; use long boards to restrict joints to minimum. Conditions met and not covered by the Drawings and Specifications shall be resolved in conformity with best practice of trade.
- C. Joints: Butt sheets loosely together with tapered edges always placed together (butt edges placed next to tapered edges are not permitted). Sand or kerf cut edges and mill ends to provide smooth jointing on exposed face. Stagger end joints. Shim wallboard on wood framing to get even joints without offsets.
- D. Fasteners: Place fasteners no less than 3/8 inch from edges of boards. Install fasteners with heads dimpled slightly below surface; do not cut through paper. Use crown face hammers for driving nails and approved power tools for self drilling screws. Fasten gypsum wallboard to bearings as follows:
 - 1. Ceilings, Non-rated: Screws 12 inches on center.
 - 2. Walls, Non-rated: Screws 12 inches on center.
 - 3. Ceilings, One-hour Rated: Base layer, screws 12 inches on center; Face layer, screws 8 inches on center.
 - 4. Walls, One-hour Rated: Screws 8 inches on center at edge bearings, 12 inches on center at field bearings.
- E. Ceilings: Place boards with long dimension at right angles to supports and end joint occurring over supports. On fire-rated ceilings butted end joints may be placed between supports and reinforced on upper side with 8 inch wide wallboard back up strips set in

approved adhesive. Place perimeters of ceilings and edges of openings over solid bearing members.

- F. Partitions: Place boards with long dimensions either vertical or horizontal (but not combination of both) on studs. Stagger vertical joints on opposite sides of partitions. Locate joints at least 12 inches from jambs of openings. Keep end joints to minimum.
- G. Cutting and scribing: Cut neatly to fit around outlets, switch boxes and other protrusions, using keyhole saw or specially designed cutting tool for opening of exact shape and size needed.
- H. Trim: Edge exterior corners with specified bead set to true plumb line. Where board joins or abuts a material other than gypsum board, cover end of board with specified metal casing, leaving joint sufficient for installation of sealant. Attach trim with nails at wood studs at 9 inches on center each flange, and type S-12 screws at steel studs at 9 inch on center each flange. No clenching allowed.
- I. Interior Wall Sealant: At interior partitions, use double bead of specified material. Install at floors, wall intersections, where walls abut other materials and at electrical boxes. Apply in accord with manufacturer's printed directions.
- J. Fixture Enclosures: Provide 1 hour enclosures of 5/8 inch thick UL labeled gypsum board around fixtures in one hour fire rating ceilings.
- K. Gypsum Board Inserts for Suspended Grid Ceiling: Cut gypsum board panels for snug fit in ceiling grid. Apply metal casing beads to all edges, mitered at corners, and deliver to painting contractor for painting before installation under Section 09 9100, Painting.

3.3 INSTALLATION OF SPECIALTY PANELS

- A. Fiberboard Base for Vinyl Wallcovering:
 - 1. Apply vertically.
 - 2. Glue and nail to gypsum board backing with 5d nails at 12 inches on center at supports with nails dimpled, leaving minimum 1/8 inch gap between boards.
 - 3. Fill gap between boards with hardening-type patching compound such as "Fixall" with maximum hardening time of 1-1/2 hours.
 - 4. Allow material to dry for 24 hours.
 - 5. Tape and finish joints and nail depressions as specified for gypsum board application, leaving surfaces ready for priming and application of vinyl wall covering.

3.4 FINISHING

- A. Level of Finishes: In accordance with GA-214.
 - 1. General:
 - a. Finish joints, screw/nail heads or fastener depressions, applied metal trim and surface blemishes, applying tape and compounds in strict accord with manufacturer's printed directions.

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- b. Exposed wallboard shall be finished and sanded as necessary to provide flat, smooth surface ready for decoration and the Finish Levels noted below.
 - c. Primer/sealer, where indicated, is in addition to first coat of primer/sealer in Section 09 9100, Painting.
 - 2. Level 2 Finish: Provide where the gypsum wallboard will be covered by fiberboard base/tackboard panels or wall-fastened casework.
 - 3. Level 3 Finish: Provide for finishes with medium to heavy textures. Provide one coat of drywall primer/sealer at prepared surfaces prior to application of final finish.
- B. Spray Texture Coat: Apply at exposed gypsum wall board and plaster surfaces not scheduled for a smooth finish.
- 1. Unless otherwise specified or scheduled, apply the single-coat spray texture to all surfaces in a degree of texture approved by the Architect to match approved sample. No texture shall be applied until approved in writing by the Architect.
 - 2. Finish Texture: Spray texture shall be as follows, unless otherwise noted.
 - a. Walls: Medium texture, Level 3 finish required.

3.5 ADDITIONAL INSTALLATION REQUIREMENTS

- A. Accessories and Light Fixture Protection: Wherever accessories, panels and recessed light fixtures penetrate fire-rated gypsum wallboard, provide protection box assembly in accordance with UL specifications and as detailed to maintain integrity of rated wall/ceiling system.
- B. Access Panels: Install where required for access to serviceable equipment. Refer to Section 08 3113, Access Doors and Frames, and Mechanical and Electrical work under Divisions 22, 23 and 26.
- C. Fill voids at wall/floor joints greater than 3/16 inch to provide solid backing for floor base.

3.6 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, immediately make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.7 CLEAN-UP

- A. Remove all empty containers, scraps of material and all other debris, and leave premises broom clean. Clean all adjoining work spotted or otherwise defaced by this operation.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Suspended acoustical ceiling panels.
 - 2. Ceiling suspension system.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 05 3000, Metal Decking.
- D. Section 05 4000, Cold-Formed Metal Framing.
- E. Section 06 1000, Rough Carpentry.
- F. Section 09 2900, Gypsum Board.
- G. Division 23, Mechanical Work.
- H. Division 26, Electrical Work.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. DSA Interpretation of Regulations:
 - 1. IR A-5: Acceptance of Products, Materials, and Evaluation Reports.
 - 2. IR 25-2.13: Metal Suspension Systems for Lay-in Panel Ceiling: 2013 CBC.
- D. ASTM International (ASTM):
 - 1. A 568: Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled.
 - 2. A 641: Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 3. C 423: Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

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4. C 635: Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 5. C 636: Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 6. C 1414: Standard Practice for the Separation of Americium from Plutonium by Ion Exchange.
 7. D 3273: Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 8. E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
 9. E 119: Standard Test Methods for Fire Tests of Building Construction and Materials.
 10. E 580: Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
 11. E 1111: Standard Test Method for Measuring the Interzone Attenuation of Open Office Components
 12. E 1264: Standard Classification for Acoustical Ceiling Products.
 13. E 1477: Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- E. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
1. 62.1: Ventilation for Acceptable Indoor Air Quality.
- F. International Code Council-Evaluation Services (ICC-ES):
1. AC 156: Acceptance Criteria for Seismic Qualification Testing of Non-structural Components.
 2. ESR-1308: Fire- and Nonfire-Resistance-Rated Suspended Ceiling Framing Systems Evaluation Report.
- G. American Society of Civil Engineers (ASCE) and Structural Engineering Institute (SEI):
1. ASCE/SEI 7: Minimum Design Loads for Buildings and Other Structures.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Coordination:

1. Develop and coordinate locations of work supported by or penetrating through ceiling with the other Sections involved prior to making shop drawing submittal. In particular, note partitions that are to be installed prior to ceiling installation.
2. Coordinate work with items specified under other Sections.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: Dimensioned reflected ceiling plans indicating location of light fixtures, mechanical air-supply and return outlets and other items which affect ceiling.
 1. Clearly indicated where proposed installation deviates from that indicated in the Drawings.
 2. Show parts, connections and anchorages and suspension system details including:
 - a. Trapeze details.
 - b. Seismic control details.
- B. Product Data: Submit list and complete descriptive data of products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Samples:
 1. Each type of grid member, grid accessory and ceiling panel to Architect for review.
 2. Manufacturer's full range of colors for Architect's selection.
- D. Delegated Design:
 1. Seismic and structural design engineering calculations prepared by the engineer in responsible charge retained by the Contractor shall be submitted to demonstrate compliance with the CBC, Seismic Categories D, E, and F, and adequacy of suspension system to withstand specified seismic and structural loading.
 2. Engineer shall be a California licensed civil or structural engineer.

1.6 INFORMATIONAL SUBMITTALS

- A. Test Reports: Test Report on load capacities.
 1. Prior to installation of the suspended ceiling system, a copy of an acceptable substantiating test report and certifications shall be submitted to the Architect.
 2. The test shall show that the axial tension and compression ultimate load capacity of the runners and cross runners and their splices, intersection connections and expansion devices complying with these specification requirements.
 3. Evaluation of test results shall be made on the basis of the mean values resulting from tests of not fewer than three identical specimens, provided the deviation of any individual test result from the mean value does not exceed plus or minus 10 percent.
 4. Tests shall be made by an approved testing agency.

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B. Sustainable Design:

1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

C. Sample of Manufacturer's warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Specified maintenance materials.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Deliver open partially used boxes of acoustical panels and tile to Owner for replacement stock. Supplement with full boxes to assure submitted amount is not less than five percent of the amount installed of each type of acoustical panel and acoustical tile installed under this Contract.

1.9 QUALITY ASSURANCE

- A. Submitted system shall comply with design and performance criteria.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
- D. 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.

1.10 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.

1.11 FIELD CONDITIONS

- A. Installer shall be responsible for checking Drawings and job conditions, conforming to code requirements, and for providing additional channels and hangers as required for support of electrical and mechanical work for type and extent of work. Coordinate layout with other work which penetrates or is supported by ceiling suspension system.
- B. Ceiling products and suspension systems shall be installed and maintained in accordance with manufacturer's written installation instructions for that product in effect at the time of installation and best industry practice.
- C. Ambient Conditions:
 - 1. Do not install ceiling system when building is excessively cold and damp or hot and dry. Prior to installation, the ceiling product shall be kept clean and dry, in an environment that is between 32 degrees Fahrenheit and 120 degrees Fahrenheit and not subject to abnormal conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.
 - 2. Heating system shall be installed and operating when necessary to maintain temperature. Roof and exterior doors shall be completed and made watertight.
- D. Existing Conditions:
 - 1. Make and be responsible for field dimensions necessary for proper fitting and completion of work. Report any discrepancies to Architect before proceeding.
 - 2. Do not install acoustical ceilings until work above ceilings is completed, including testing and approval of Mechanical work.
 - 3. Plastering, drywall and concrete installation shall be complete and fully cured. Windows shall be in place and glazed.
 - 4. Protect adjacent surfaces from damage during work of this Section.
 - 5. Notify Architect, in writing, of any conditions preventing proper application of acoustical ceilings.

1.12 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty agreeing to repair or replace acoustical panels and ceiling grid that fails within the warranty period.
 - 1. Failures include, but are not limited to:
 - a. Acoustical Panels: Sagging and warping of standard panels as a result of defects in materials or factory workmanship. In addition, acoustical panels that are designed to resist the growth of micro-organisms and installed with manufacturer's suspension system and which exhibit any visible sag and fail to resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
 - b. Grid System: Rusting and manufacturer's defect.
 - 2. Warranty Periods:

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- a. Acoustical Panels:
 - 1) Typical: Ten years.
 - 2) Panels with with "HumiGuard Plus," *ClimaPlus*," or equal dimensional stability characteristic and supplied by a single source manufacturer: 30 years.
- b. Grid: Ten years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: As follows, or equal.
 - 1. Armstrong World Industries, 717-397-0611, www.armstrongceilings.com.
 - 2. CertainTeed – Saint Gobain, 800-233-8990, www.certainteed.com.
 - 3. USG, 800-950-3839, www.usg.com.
- B. Substitutions: Any substitution to be considered equal shall be similar in texture and pattern, provide similar color options, meet physical characteristics of specified material, and be submitted for approval in accordance with Section 01 3300, Submittal Procedures.

2.2 DESIGN AND PERFORMANCE CRITERIA

- A. Provide completely designed system complying with requirements of CBC Section 808, ASTM C 635, ASTM C 636 and DSA Interpretation Regulation 25-2.13.
- B. Seismic Requirements:
 - 1. Provide acoustical ceiling system that has been evaluated by an independent party and found to be compliant with the California Building Code, current edition, Seismic Categories D, E, and F. Refer to requirements for delegated design in Article "Action Submittals."
 - 2. System shall be tested in accordance with International Code Council - Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components as evidenced by International Code Council Evaluation Report.
- C. Fire Performance Characteristics: As follows, tested in accordance with ASTM E 84 and complying with ASTM E 1264 for Class A products.
 - 1. Flame Spread: 25 or less.
 - 2. Smoke Developed: 50 or less.
- D. Fire-rated ceilings shall be rated in accordance with American Society for Testing and Materials ASTM E 119 and bear an Underwriters Laboratories Inc. (UL) Time Design number applicable to the proposed installation.

1. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
 2. Provide copy of Underwriters' Laboratories, Inc. certification for tested, labeled and listed steel grid members and acoustical panels to meet time-design fire endurance rating of one hour, or more as indicated on Drawings, for combined suspended acoustical ceiling and floor or roof assemblies shown.
 3. Assembly shall have been approved by State Fire Marshal.
- E. Sustainable Design:
1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.3 SUSPENDED CEILING SYSTEM

- A. Suspended Ceiling System: 9/16 inch exposed tee; "Suprafine XL High Recycled Content" Armstrong World Industries as specified and the basis of design, or equal.
- B. Main beams and cross tees shall be in accordance with CBC Section 803 for Category D, E and F as described in ESR-1308.
1. Structural Classification: ASTM C 635, ASTM C 636, and the DSA IR for Heavy Duty systems.
 2. Material, Finish and Color: Suspension system members to be galvanized coated. Exposed material to be factory finished in low sheen satin white unless noted otherwise.
- C. Attachment Devices: In accordance with the Drawings and these Specifications.
- D. Wire for Hangers and Ties: In accordance with the Drawings and these Specifications.
1. Wire shall be galvanized with Class 1 zinc coating, carbon steel conforming to ASTM A 641 of gauge certified by load test data as capable of carrying 5 times design load but in no case less than size No. 12, with soft temper and minimum tensile strength of 70 ksi.
- E. Ceiling Grid Components: In accordance with the Drawings and these Specifications.
1. Wall Molding: Nominal 1 inch x 1 inch x 96 inches hemmed, pre-finished angle molding; Armstrong #7880HRC, or equal.
 2. HD Main Beam: 9/16 inch x 1-11/16 inches x 144 inches; Part #7501HRC.
 3. Cross Tee:
 - a. 2 feet Tee: 9/16 inch x 1-11/16 inches x 24 inches; Part #XL7520HRC.
 - b. 4 feet Tee: 9/16 inch x 1-11/16 inches x 48 inches; Part #XL7540HRC.
 4. Main Beam Splice: Manufacturer's standard.
 5. Expansion Joint: Manufacturer's standard in accordance with ASTM E 580.
- F. Accessories:

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1. Beam End Retaining Clip: 2 inches, 0.034 inch thick, hot-dipped galvanized cold-rolled steel in accordance with ASTM A 568; Item # BERC2 by Armstrong World Industries, or equal.
 - a. Use to join main beam or cross tee to wall molding at attached wall and unattached wall condition.
 - b. Pop rivets are not acceptable.
 2. Seismic Joint Clip: 5 inches x 1-3/4 inches, hot-dipped galvanized cold-rolled steel in accordance with ASTM A 568; Item # SJC by Armstrong World Industries or equal.
 - a. The 2 piece unit is designed to accommodate a seismic separation joint for cross runner support at main runner.
- G. Other materials, not specifically described but required for a complete and proper installation of ceiling systems, including necessary clips, wires, and accessories to complete the suspension system.

2.4 ACOUSTICAL CEILING PANELS

- A. Manufacturer: Armstrong World Industries, Inc. as specified and the basis of design, or equal. Products specified are by Armstrong, unless otherwise noted.
- B. Acoustical Ceiling Panel - Type 1: Dune, No 1777HRC.
1. Surface Texture: Fine.
 2. Composition: Mineral Fiber.
 3. Color: White.
 4. Size: 2 feet x 4 feet x 5/8 inch.
 5. Edge Profile: Beveled Tegular for interface with specified suspended ceiling system.
 6. Performance Characteristics:
 - a. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.50.
 - b. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35.
 - c. Articulation Class (AC): ASTM E 1111; Classified with UL label on product carton N/A.
 - d. Emissions Testing: Protocol specified in Section 01 3543, Environmental Procedures; less than 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality."
 - e. Flame Spread: ASTM E 1264 Classification.
 - 1) Type III, Form 2, Pattern C E.
 - 2) Class A (UL).
 - f. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.81.

- g. Dimensional Stability: Panels shall be resistant to humidity and sag at temperature is between 32°F and 120°F and can be installed under conditions where the area is not enclosed or the HVAC systems is not functioning; "HumiGuard Plus."
- h. Antimicrobial Protection: Paint finish shall contain a special biocide to inhibit or retard the growth of mold or mildew in accordance with ASTM D 3273, and provides resistance against gram positive and gram negative odor and stain causing bacteria; "BioBlock Plus."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of the work of this Section, carefully examine and verify that installed work of other trades is complete to the point where this installation may properly commence.
 - 1. Wet work, including plastering and concrete, shall be complete and cured prior to installation of the acoustical ceilings.
- B. Verify that suspended acoustical ceiling may be installed in accordance with the original design, codes and regulations, and the reviewed shop drawings.
 - 1. In event of discrepancy, immediately notify Architect.
 - 2. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 INSTALLATION OF SUSPENDED CEILING SYSTEM AND PANELS

- A. Suspended Ceiling System: Install in accordance with manufacturer's printed instructions, the Drawings, ASTM C 636, ASTM E 580, and the DSA IR. Fabrication and erection methods and workmanship shall result in completed installation that is neat and uniform, free from defects and irregularities. Suspended ceiling system member lengths shall be as long as is practical.
 - 1. Install wall molding at perimeter securely fastened at all, straight, level and in true alignment with plane of grid.
 - 2. Hang main runners in a flat, true, level plane, spaced 4 feet on-center and supported by hanger wires spaced not more than 4 feet on-center. Cross tees shall be placed on 2 foot intervals and locked to main runners in true alignment and to provide a continuous cross tie right angle to main runner. At two adjacent walls main runners and cross tees shall be securely interlocked to wall angles in accordance with the Drawings. Secure wall moldings to walls as shown..
 - 3. Expansion Joints and Penetrations
 - a. Expansion joints shall be provided where require by the DSA IR and in accordance with ASTM E 580.
 - b. Sprinkler heads and other similar devices that are not integrally tied to the ceiling system in the lateral direction shall have a 2 inch oversized ring, sleeve or adaptor through the ceiling tile to allow free movement of one inch in horizontal directions. A flexible sprinkler hose fitting that can

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accommodate 1 inch of ceiling movement may be provided in lieu of the oversized ring, sleeve or adaptor.

4. Hanger wires shall be provided for main runners and cross runners within 8" of ceiling perimeters or as indicated otherwise in Drawings. Install hanger wires as plumb as possible throughout. Secure to main runners at lower end. Hanger wires to be no more than 1 in 6 out of plumb. Attachment of hanger wires shall be in accordance with ASTM C 636, Part 2, and as shown.
5. Separate ceiling hanger and bracing wires at least six inches from unbraced ducts, pipes, conduits, etc.
6. Provide field testing of drilled in concrete anchors or power actuated anchors as shown. power actuated anchors in concrete are not permitted for bracing wires. If any anchor fails, remaining anchors shall be tested at no expense to the Owner.
7. Frame around light fixtures, grilles, registers, etc. Light fixtures shall be attached to the ceiling grid to resist a horizontal force equal to the weight of the light fixture. Light fixtures 4 feet x 4feet shall have #12 gauge slack safety wires at each corner.
8. Flush or recessed light fixtures, mechanical terminals, and flexible sprinkler hose fittings, or services weighing less than 56 pounds may be supported on heavy duty grid but shall have two #12 gauge slack safety wires from diagonal corners to the structure above.
9. Flush or recessed light fixtures and air terminals or services mounted in heavy duty suspension systems and weighing 56 pounds or more shall be independently supported by not less than four taut 12 gauge wires each attached to the fixture and to the structure above. The four taut 12 gauge wires including their attachment to the fixture shall be capable of supporting four times the weight of the item being supported.
10. Projection screens suspended from runners shall utilize T-bar support clip, Caddy Clip "IDS" Series clips over grid with additional hanger wire and four splay wires.

B. Lateral Bracing:

1. A set of 4 bracing wires, splayed at 45 degrees, shall be provided at 12'-0" on center each way. Wires shall be taut without causing ceiling to lift. There shall be a brace assembly a distance of not more than 6'-0" from each surrounding wall, expansion joint and at the edges of any ceiling vertical offsets. A minimum of one set of bracing wires is required between any two adjacent expansion cut-outs on runners being braced.
 - a. Lateral Force Brace Assembly Spacing: When the Design Spectral Acceleration Parameter (Sds) indicated on the Structural Drawings, exceeds 1.15, the spacing for the lateral bracing assembly shall be reduced as follows:
 - 1) Sds greater than 1.15 and less than 1.73:
 - a) For z/h greater than 0.5: 8 feet x 12 feet.
 - b) For z/h less than or equal to 0.5: 12 feet x 12 feet.
 - 2) Sds greater than 1.73:
 - a) For z/h greater than 0.5: 8 feet x 8 feet.
 - b) For z/h less than or equal to 0.5: 8 feet x 12 feet.

2. Method of Attachment: Secure lateral bracing to structural members as shown on the plans. Secure at right angles to the direction of the partition and four ways in large ceiling areas.
 3. Attachment of bracing wires shall be in accordance with ASTM C 636, Part 2, and as shown; no splicing is allowed.
- C. Compression Struts: Install in accordance with Drawings at bracing wire lateral force bracing. Compression strut shall resist vertical component of force induced by the bracing wires. Fasten strut to main runner and extend to and fasten to the structural members supporting the floor or roof above.
1. Strut and diagonal bracing shall be designed and constructed in compliance with the DSA IR, and shall not be more than 1 horizontal in 6 vertical out of plumb.
 2. Provide solid blocking wherever necessary for proper installation and connection at strut to floor or roof framing.
- D. Acoustical Ceiling Panels:
1. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.
 2. For panels with a directional pattern, install with grain in same direction unless otherwise approved by Architect.
 3. Cut and rabbet edges of tegular edge acoustical panels, at border areas and vertical surfaces to exactly match factory cut tegular edge.

3.3 CLEANING

- A. Upon completion, clean soiled and discolored surfaces so that installation is free from defects. Remove and replace damaged or improperly applied material, as directed.
- B. Acoustical ceiling panels, acoustical ceiling tile and suspended ceiling system shall be free of scratches, stains, smudges, fingerprints, discolorations, breaks, chips or other damage. Finished ceilings shall be uniform in appearance, including uniform color and texture.
- C. If cleaning is required, comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.4 PROTECTION

- A. Protect work and suspended acoustical ceiling materials prior to and during installation, and protect the installed work and materials of other trades.

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- B. In the event of damage, make repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

END OF SECTION

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Last Updated: March 26, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Resilient base.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International:
 - 1. D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
 - 2. D2047, Standard Test method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
 - 3. D2240: Standard Test Method for Rubber Property-Durometer Hardness.
 - 4. D3389: Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader).
 - 5. D4258: Standard Practice for Surface Cleaning Concrete for Coating.
 - 6. D4259: Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application.
 - 7. E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 8. E648: Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 9. E662: Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - 10. F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
 - 11. F1861: Standard Specification for Resilient Wall Base.
 - 12. F2169: Standard Specification for Resilient Stair Treads.

RESILIENT BASE AND ACCESSORIES

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1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Pre-Installation Meeting: Conduct at Project site in accordance with associated flooring product specifications.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For resilient base at locations and conditions not shown or indicated on the Drawings.
 - 1. Show elevations of surfaces to receive base and including columns, enclosing partitions, built-in furniture, and casework. Note base height and profile.
- B. Product Data: Manufacturer's descriptive literature for each type of product to be provided to demonstrate compliance with specified attributes.
 - 1. Include manufacturer's standard color charts showing full range of colors and patterns available for each type of product required.
 - 2. Where color has been specified, clearly mark the color to be provided.
 - 3. Identify each product using same designations indicated on Drawings.
- C. Samples:
 - 1. Resilient Products:
 - a. Base: 12 inches long.
 - 2. Unless color is specified, submit manufacturer's full range of colors for each type of resilient product for Architect's selection. Architect may select more than one color.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample of manufacturer's warranty.
- B. Record of Pre-Installation Meeting.
- C. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.

2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
 - b. Resilient Materials: Documentation or Certification that products meet the pollutant emission limits from one of the sources specified in Section 01 6116.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Maintenance Data: To include in maintenance manuals.
- C. Specified maintenance materials.

1.8 MAINTENANCE MATERIALS SUBMITTAL

- A. Resilient Base: Furnish one full carton additional rubber base from same lot of each color utilized, 100 linear feet minimum.
 1. Mark boxes with manufacturer's name and color pattern.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for resilient product installation indicated.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- D. Materials, components, assemblies, workmanship and installation are to be observed by the Project Inspector. Work not so inspected is subject to uncovering and replacement.
- E. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Coordinate mockups in this Section with mockups specified in other Sections.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- B. Store materials in protected, clean, 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 accordance with manufacturer's written recommendations.

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1.11 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 degrees F or more than 85 degrees F, in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 degrees F or more than 85 degrees F.
- C. Do not apply materials on wet or damp surfaces.
- D. Install resilient products after other finishing operations, including painting, have been completed.

1.12 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for the following types of resilient material against defects in material and workmanship.
 - 1. Base and Accessories: 2 years.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Fire Resistance:
 - 1. Critical Radiant Flux: Class 1 (minimum 0.45 watt per square centimeter) in accordance with ASTM E648 and NFPA 253.
 - 2. Smoke Density: 450 or less per ASTM E662 and NFPA 258.
- B. Sustainable Design:
 - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
 - 2. Resilient flooring material must comply with one of the certification and compliance programs specified in Section 01 6116.

2.2 RESILIENT BASE

- A. Thermoset Rubber Base: PVC free complying with ASTM F1861, Type TS, Group 1; "BurkBase Premium TS Molded Wall Base (PVC-free)" by Mannington Commercial as specified and the basis of design, or equal.

1. Profile: Standard Cove.
 2. Gauge: 1/8 inch.
 3. Height: 4 inches.
 4. Length: 4' pieces.
 5. Colors: As selected by Architect from manufacturer's full range.
 6. Flammability: Class B when tested in accordance with ASTM E84, NFPA 255.
- B. Corners: Job-formed. Cope inside corners and wrap outside corners.
1. Factory pre-formed corners are not acceptable.

2.3 ADDITIONAL MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: VOC compliant, water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. In the event of discrepancy, immediately notify the Architect. Do not proceed with installation of flooring in areas of discrepancy until all such discrepancies have been resolved and all unsatisfactory conditions have been corrected.
- D. Substrate Testing for Resilient Stair Accessories: Installer to obtain Moisture Content/pH Testing results and acknowledge, in writing, that the report has been received and approved. Installation of resilient stair accessories may not begin without this review and approval.
- E. Start of installation indicates Installer's acceptance of substrate surfaces and conditions.

3.2 INSTALLATION, GENERAL

- A. Do not install resilient products until they are the same temperature as the space where they are to be installed.
1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

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- B. Comply with manufacturer's installation instructions.

3.3 RESILIENT BASE INSTALLATION

- A. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
 - 1. Minimum piece length 24 inches.
- C. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch resilient base during installation.
- E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- F. At gypsum board and fiberboard walls, fill voids at wall/floor intersection fully before installing base to provide complete backing of base. Do not install base with gap; this will result in deformation by furniture and will require removal and replacement of base.
- G. Coped Inside Corners: Cut first piece square to the corner. Undercut and scribe the adjacent piece to the corner, attach in accordance with manufacturer's instructions.
- H. Wrapped Outside Corners: With top set gauge, remove portion of back side of base to the bend. Make two relief cuts, one on each side of the bend at the bottom of the base. Remove a tapered piece from the bottom of the toe. Attach per manufacturer's instructions.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

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1. Provide a temporary non-staining paper pathway in all traffic areas.

END OF SECTION

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Base and Accessories.docx
Last Updated: November 1, 2021*

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fabric-backed vinyl wall coverings.
 - 2. Adhesives and cleaning of adjacent surfaces.
 - 3. Installation accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 09 2900, Gypsum Board, including:
 - 1. Surface preparation.
 - 2. Fiberboard Base.
 - 3. Vinyl Covered Tackable Panels.
- D. Section 09 9100, Painting; primer at gypsum board to receive other wall coverings.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
 - 1. E84: Test Method for Surface Burning Characteristics of Building Materials.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 255: Standard Method of Test of Surface Burning Characteristics of Building Materials.
 - 2. NFPA 286: Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- E. Wallcoverings Association (WA):
 - 1. W-101: WA Quality Standard for Polymer Coated Fabric Wallcovering.

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1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

1.5 ACTION SUBMITTALS

- A. Product: Manufacturer's complete descriptive data of products proposed for use. Include manufacturer's specifications, published reports of tests specified, installation instructions, and maintenance instructions.
- B. Samples:
 - 1. Manufacturer's full range of colors for Architect's selection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For applicator.
- B. Sample of manufacturer's warranty.
- C. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance data including methods for maintaining wall covering as well as precautions for use of cleaning materials and methods that could be detrimental to finishes and performance.
- B. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- C. Specified maintenance materials.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Material: Furnish in quantity equal to one percent or one bolt whichever is more, of material installed for each type, pattern and color used on the work and taken from

the same run as that used for the project. Furnish full width material in one roll increments but not less than one full roll of each type, pattern and color.

1.9 QUALITY ASSURANCE

- A. Applicators Qualifications: Work of this Section shall be performed by a firm regularly engaged in the installation of commercial wall coverings of the types and qualities specified and acceptable to the Architect. Foreman and workers shall be thoroughly experienced in performing the work equal to that required.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- D. 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.
- E. Submittals other than those specified shall match the appearance and color of the specified material, and shall equal or exceed the quality, total weight, fabric backing, tensile and tear strength, UL fire ratings and mildew resistance of the specified product.
- F. Imperfections such as engraving roller die marks, roller repeat marks, glossy surface appearance or other features deemed not in conformance with the specified materials, will be cause for rejection by the Architect, if evidenced in either the submitted samples or the manufactured material delivered to the job.

1.10 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 accordance with the manufacturer's written recommendations.

1.11 FIELD CONDITIONS

- A. Ambient Conditions:
 - 1. Provide continuous ventilation and heating facilities to maintain substrate and ambient temperatures above 65 degrees F, unless required otherwise by manufacturer's instructions.
 - 2. Do not apply adhesive when substrate surface temperature or ambient temperature is below 65 degrees F, or relative humidity is above 40 percent.
 - 3. Maintain these conditions 72 hours before, during and after installation of vinyl wall covering.

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- B. Lighting: Do not install wall covering until a lighting level of not less than 15 foot-candles (160 lux) is provided on the surfaces to receive wall covering.
- C. Do not apply under conditions which jeopardize quality of appearance of finished product.
- D. Ensure maximum surface moisture conforms to wall covering manufacturer's requirements and surface exhibits negative alkalinity.

1.12 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

1.13 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for wall covering against defects in materials and workmanship as follows:
 - 1. Wall covering materials when adhered to a sound surface with the manufacturer's recommended procedures and adhesive, shall be warranted free of manufacturing defects for a period of five (5) years.
 - 2. Assuming no deterioration in the subsurface, wall covering materials shall be further warranted against permanent surface staining attributed to mildew and / or bleed-through of foreign impurities embedded in the fabric backing, as well as separation of the vinyl from its backing.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Provide materials bearing the UL label and marking, indicating the fire hazard classification of the wall covering as determined by ASTM E84.
- B. Sustainable Design:
 - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.2 GENERAL

- A. Materials shall be ordered not less than 45 days prior to the scheduled installation date.
- B. Substitutions: Any substitution to be considered equal must be similar in texture and pattern, provide similar color options, meet physical characteristics of specified material, and be submitted for approval in accordance with Section 01 3300, Submittal Procedures.

2.3 WALL COVERING MATERIALS

- A. Flexible Vinyl Wall Coverings: "Linden II" by Koroseal Interior Products, or equal complying with WA-101, Type II.
 - 1. Total Weight: Minimum 20 ounces per linear yard.
 - 2. Roll Width: 54 inches.
 - 3. Fabric Backing: Coarsely woven cotton; "Osnaburg."
 - 4. Mildew/Mold Inhibitor: Integral with wallcovering.
 - 5. Flammability:
 - a. NFPA 255 (UL723): Class A.
 - b. NFPA 286: Meets requirements for flame spread, smoke developed, and flashover.
 - 6. Color and Pattern: As selected by Architect from manufacturer's standard range.
- B. Microvented Flexible Vinyl Wall Covering: "Linden II" by Koroseal Interior Products, or equal complying with WA-101, Type II.
 - 1. Total Weight: Minimum 20 ounces per linear yard.
 - 2. Roll Width: 54 inches.
 - 3. Fabric Backing: Coarsely woven cotton; "Osnaburg."
 - 4. Mildew/Mold Inhibitor: Integral with wallcovering.
 - 5. Flammability:
 - a. NFPA 255 (UL723): Class A.
 - b. NFPA 286: Meets requirements for flame spread, smoke developed, and flashover.
 - 6. Color and Pattern: As selected by Architect from manufacturer's standard range.
 - 7. Microvent Frequency Rate: 150 holes per square inch.
 - 8. Location of Use: All exterior walls unless specifically noted otherwise.

2.4 WALL COVERING PRIMERS AND ADHESIVES

- A. General:
 - 1. Provide products that are mildew-resistant, non-staining, and acceptable to the wall covering manufacturer.
- B. Primer: VOC compliant, clear acrylic; "PRO-909" by Roman Decorating Products, or equal.
- C. Adhesive: VOC compliant, mildew resistant; "Pro-880" or strippable "Pro-870" by Roman Decorating Products, or equal.

2.5 ACCESSORIES

- A. Masking Tape: 3M "General Purpose Type," or equal.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of the work of this Section, carefully examine and verify that installed work of all other trades is complete to the point where this installation may properly commence.
 - 1. Verify that gypsum board surfaces have been finished to Level 4 in accordance with GA-214 as specified in Section 09 2900, Gypsum Board.
 - 2. Ensure wall surface flatness tolerances do not vary more than 1/8 inch in 10 feet, nor vary at a rate greater than 1/16 inch per running foot.
 - 3. Unacceptable surfaces will be made acceptable before any material is applied. Beginning of wall application will constitute acceptance of surface.
- B. Verify that specified items may be installed in accordance with the approved design. In event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PREPARATION

- A. Comply with manufacturers written instructions for surface preparation.
- B. Test surfaces to receive wall covering with a moisture meter. Do not install wall covering on surfaces with a moisture content exceeding 4 percent.
- C. Clean substrates of substances that could impair wall covering's bond, including mold, mildew, oil, grease, incompatible primers, and dirt.
- D. Prepare substrates to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, and defects.
- E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION

- A. General:
 - 1. Do not begin installation of wall covering until surfaces to receive wall covering have been correctly prepared and primed.
 - 2. Comply with wall-coverings manufacturers' written installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
 - 3. Install wall-covering prior to installation of all wall mounted plumbing, cabinets, molding and electrical fixtures.
 - 4. Notify the Architect immediately of variations in color or pattern match. Do not continue with work until approved by the Architect.
 - 5. Microvented wall coverings shall be used on all exterior walls unless specifically noted otherwise.

6. Final product shall be secure and clean with all air bubbles eliminated and in good contact with under surface and without gaps or overlaps.
 7. Fill all pin holes, cracks and other surface imperfections with spackle and sand smooth. Scrape off all pimples to leave surface smooth and free of imperfections, defects and debris prior to application of wall covering.
 8. Before cutting, examine pattern and color and determine that they are the correct pattern and color as specified.
- B. Primer: Surfaces to receive wall covering materials shall be primed with specified primer prior to installation.
- C. Application of Wall Covering:
1. Materials shall be cut using straight edge so that all seams will butt without gaps and will form straight plumb lines.
 2. Closely and neatly butt all seams; do not overlap.
 3. Hang wall covering with length of roll or sheet vertical, and with each width in a single piece; horizontal seams will not be accepted.
 4. Make vertical seams at least 6 inches from inside and outside corners. Seams shall be straight and truly vertical.
 5. Outside corners receiving corner guards should be used as a location to adjust wall-covering needing realignment due to "out of-plumb" walls.
 6. Patterns shall be matched and aligned with adjacent material.
 7. Install each roll in sequence starting from the highest to the lowest number and each strip in the same sequence as cut from the roll.
 8. Install non-match panels on the hanging surface, reversing every other panel unless otherwise recommended by the manufacturer. Match side joints for continuity.
 9. If pattern is not random, examine the repeat design to assure pattern alignment. If necessary trim salvage deep enough to assure color uniformity.
- D. If defective material is discovered, stop work and immediately notify the Architect.

3.4 FIELD QUALITY CONTROL

- A. After the application of three strips, request inspection by the Architect, and if there are variations in color or pattern which are considered to be excessive, the wall covering distributor or manufacturer's representative shall be notified for their inspection before any further wall covering is installed.
- B. Wall covering is not required behind fixed cabinets, and chalkboards and tackboards larger than 4 feet x 4 feet.

3.5 CLEANING

- A. Excessive paste shall be immediately cleaned from surfaces as work progresses. Scrape material to remove all air pockets and wrinkles and to insure positive contact with wall surfaces.

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- B. Upon completion of installation, remove manufacturer's temporary label, marks of identification. Thoroughly wash surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition. Replace damaged parts and surfaces which are not free from imperfections.

3.6 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. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

END OF SECTION

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Last Updated: September 15, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Painting and painter's finish on all exposed exterior and interior surfaces, except prefinished items and unless otherwise noted, as required to complete finishing of the Work. The Work includes, but is not necessarily limited to, the following specific items:
 - 1. Paint, stain or otherwise finish all new surfaces.
 - 2. Back priming of concealed surfaces, except as otherwise specified.
 - 3. Paint, repaint or finish of existing painted surfaces altered, defaced or damaged as a result of work of this Contract.
 - 4. Paint site items which are not prefinished, including posts, screens, panels, bollards, supports, rails and other similar improvements.
 - 5. Mechanical and plumbing vents on roof.
 - 6. Unpainted or unfinished exposed building components, pipes and conduit, including sprinkler piping, and metal ductwork, which run exposed across finished or painted surfaces.
- B. Surface treatment, priming and coats of paint specified in this Section are in addition to shop priming and surface treatment specified under other Sections unless otherwise noted.
- C. Items Not Included in This Section:
 - 1. Factory and shop-prefinished items as specified in various Sections.
 - 2. Painting specified elsewhere and included in respective Sections, including but not necessarily limited to shop priming.

1.2 WORK NOT TO BE PAINTED UNLESS OTHERWISE INDICATED

- A. Exposed exterior concrete and concrete slab surfaces, except as noted.
- B. Unfinished masonry, except where noted.
- C. Suspended acoustical ceilings and acoustical tile, except as noted.
- D. Pre-finished casework and other factory and shop-prefinished items as specified in various Sections.
- E. Finish hardware except prime coated items.
- F. Items typically not to be painted including, but not limited to, the following:
 - 1. Glass.
 - 2. Ceramic tile.
 - 3. Membrane roofing.

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4. Safety nosings.
 5. Resilient floor covering and base.
 6. Carpet.
 7. Pre-finished paneling.
 8. Plastic laminate.
 9. Porcelain enamel.
 10. Vinyl wallcovering, except where noted.
- G. Aluminum doors, windows, frames and railings.
- H. Metal or plastic toilet partitions.
- I. Items of chromium, copper, nickel, brass, bronze or stainless steel.
- J. Surfaces in concealed areas such as furred spaces.
- K. Tops of gravel stop flanges (including priming) where roofing material will be adhered to.
- L. Wall areas concealed by cases, counters, cabinets, chalkboards, tackboards (prime coat only required).
- M. Piping or conduit including brackets and similar items therewith running on or across unpainted or otherwise unfinished walls or ceilings.
- N. Galvanized gratings, recessed foot grilles, and thresholds.
- O. Structural steel scheduled to receive fireproofing.
- P. Existing rooms or areas not affected by work of this project, unless specifically noted otherwise.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 05 1200, Structural Steel Framing.
- D. Section 05 3000, Metal Decking.
- E. Section 07 9200, Joint Sealants.
- F. Section 08 1113, Hollow Metal Doors and Frames.
- G. Section 08 3323, Overhead Coiling Doors.
- H. Section 09 2900, Gypsum Board.

- I. Section 09 7200, Wall Coverings.
- J. Divisions 22, 23 and 26, Exposed piping, ductwork and conduit.

1.4 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
 - 1. D523: Standard Test Method for Specular Gloss.
 - 2. D4263: Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
 - 3. D6386: Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.
 - 4. D7396: Standard Guide for Preparation of New, Continuous Zinc-Coated (Galvanized) Steel Surfaces for Painting.
- D. Master Painters Institute (MPI):
 - 1. Architectural Painting Manual Guide Specification.
- E. The Association for Materials Protection and Performance (AMPP):
 - 1. SSPC-Society for Protective Coatings/ National Association of Corrosion Engineers International (NACE):
 - a. SSPC-SP 1: Solvent Cleaning.
 - b. SSPC SP-10/NACE No. 2: Near-White Metal Blast Cleaning.
 - c. SSPC-SP 16: Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

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1.6 ACTION SUBMITTALS

- A. Product Data: Submit list and complete descriptive data of products proposed for use. Include manufacturer's specifications, published warranty or guarantee, and application instructions. Cross-reference to paint system and locations of application areas.
- B. Samples:
 - 1. Appropriately label and identify each sample, including location and application. Include Architect's number as scheduled on the Drawings, manufacturer's name, color number, and gloss units.
 - 2. Prepare on 8 inch x 10 inch card stock for selected colors and finishes.
 - 3. Submit sufficiently ahead of work progress to allow for color board assembly and distribution.
 - 4. Resubmit as requested until required sheen, color, and texture are approved.

1.7 INFORMATIONAL SUBMITTALS

- A. Statement of applicator qualifications.
- B. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.8 CLOSEOUT SUBMITTALS

- A. Guarantee: Submit Subcontractor's guarantee.
- B. Specified maintenance materials.

1.9 MAINTENANCE MATERIAL SUBMITTALS

- A. At completion of the Work, deliver to Owner extra stock of paint of each color used in each coating material used.
- B. Containers shall be full, tightly sealed, and clearly marked.
- C. Provide the following quantities:
 - 1. Field Colors: 1 five-gallon container.
 - 2. Accent Colors: 1 one-gallon container.

1.10 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Single-Source Responsibility:
 - 1. To the maximum extent practicable, select a single manufacturer to provide all materials required by this Section, using additional manufacturers to provide systems not offered by the selected principal manufacturer.
 - 2. For each individual system:
 - a. Provide primer and other undercoat paint produced by same manufacturer as finish coat.
 - b. Use thinner within manufacturer's recommended limits.
- C. Source Quality Control: Material shall be best grade products of type specified and listed below as regularly manufactured by these manufacturers. Materials not bearing manufacturer's identification as standard "best grade product" of their regular line will not be considered for use.
- D. 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.
- E. Materials and application procedures shall comply with local, state and federal air pollution control regulations.
- F. Manufacturer's representative from coating supplier shall visit the site prior to application to review and approve the specified systems. Discrepancies or recommended changes shall be submitted to the Architect for consideration prior to finalization of submittal.
- G. Site Application Mockup:
 - 1. Prior to ordering materials and unless waived by the Architect in writing, the Contractor shall provide large scale mockup areas for all colors, both interior and exterior, directly applied to the building for final color approval by the Architect.
 - 2. Minimum Size:
 - a. Ceiling Areas: Finish a panel 10 feet square.
 - b. Wall Areas: Finish a panel 8 feet long by full height of wall.
 - c. Finish a portion of other items as directed by Architect.
 - 3. Provide up to 2 adjustments at no extra cost to the Owner.
 - 4. Paint shall not be ordered or applied until such large scale sample(s) have been reviewed and approved by the Architect in writing. These requirements as described herein may be waived by the Architect in writing only.

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1.11 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, clean, dry conditions off of ground and in areas which will not interfere with the progress of the Work.
- C. Transport, store and handle in strict accordance with the manufacturer's written recommendations and as specified below.
- D. Remove paint-soiled rags and waste from premises at end of each day's work or store in metal containers with metal covers.
- E. Paint stored at site, shall be in separate structure not less than 60 feet from any other building or structure. Remove empty containers and soiled rags as they accumulate. At completion, remove structure, cleanup area, and leave in original condition.

1.12 FIELD CONDITIONS

- A. Do not apply paints and coatings under conditions which jeopardize quality or appearance of painting or finishing.
- B. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.
- C. Exterior:
 - 1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.
 - 2. Do not apply exterior paint when air or surface temperature is under 50 degrees F or when air or surface temperature will be below 50 degrees F for 48 hours after painting.
 - 3. Do not apply immediately following snow, rain, dew or during foggy weather.
 - 4. Do not apply when temperature is over 85 degrees F except in protected or shaded areas.
- D. Interior:
 - 1. Do not apply interior paint when air or surface temperature is below 50 degrees F unless temperature is maintained constantly.
 - 2. Do not apply when ventilation is inadequate to maintain humidity lower than dew point of coldest wall.
- E. Use moisture meter for determining proper moisture levels of surfaces for painting.
- F. Report to Architect in writing upon discovery of any prime coat painting specified in other Sections of Specifications that would prevent proper application of specified finish.
- G. Furnish, erect and remove scaffolding and planks required for work under this Section. Conform to state and local codes, rules and regulations.

1.13 GUARANTEE

- A. Contractor: Under conditions of its Guarantee under the Contract, paint colors shall be substantially unchanged and finishes shall maintain their original adherence without showing blisters, flaking, peeling, scaling, staining or unusual deterioration or other defects.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:
 - 1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.2 MANUFACTURERS AND COATING PRODUCTS

- A. Products are specified under "Paint Systems" in Part 3 below and are manufactured by Sherwin-Williams, except as otherwise indicated. Equivalent products to those scheduled manufactured by PPG Architectural Finishes, Glidden Professional, Benjamin Moore & Co., Dunn-Edwards, Vista, or equal, are acceptable.
- B. Materials selected for coating systems for each type surface shall be the product of a single manufacturer or shall be acceptable to manufacturer of finish coating for system.
- C. If more than one quality level of product type is marketed, use material of highest quality.

2.3 MIXING AND TINTING

- A. Deliver paints and stains ready mixed to jobsite. On-site color mixing or tinting will not be allowed.
- B. Each kind of coating for paint finishes shall be factory-mixed to match approved samples, colors, and ready for immediate application.
- C. Mix proprietary products in strict accordance with manufacturer's printed directions.
- D. Thinning, if permitted by manufacturer for a specific coating, shall be in accordance with manufacturer's instructions. Thinning of other products shall be in accordance with standard practice.

2.4 COLORS

- A. Colors shall be as scheduled on the Drawings.
- B. Colors to be selected by the Architect, or where scheduled on the Drawings, are solely for the purpose of conveying color information and do not imply manufacturer's approval or waiver of the requirement that all coatings be from the same manufacturer, unless a specific system is not available from the primary manufacturer.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this work may properly commence.
- B. Verify that painting may be performed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PREPARATION

- A. General:
 - 1. Surface preparation and product application shall be in accordance with manufacturer's printed instructions.
 - 2. In addition to prime coats indicated (primer, sealer, filler, undercoat), use two finish coats minimum, and additional coats as required for complete coverage and good appearance of scheduled finish coat.
 - 3. Surfaces to receive new finish shall be properly prepared prior to application of finish coatings.
 - 4. Do not apply paint, enamel, stains or varnishes to wet, damp, dusty, finger-marked, rough, unfinished, or defective surfaces until such defects have been corrected.
- B. Wood - Interior:
 - 1. Thoroughly sandpaper and dust off woodwork; putty nail holes, cracks, and other defects after first coat to match color of paint. Putty where finish will be clear.
 - 2. First coat on wood surfaces shall be sanded smooth. Other coats, except finish coat, shall be lightly sanded and dusted before and between each coat.
 - 3. Smoothing, rubbing and sand-papering shall be sufficient to insure good results. Sand down all raised grain or rough surfaces and re-coat. Knots, pitch pockets and sappy portion of wood, all nail holes, cuts, cracks and other defects in wood shall have any necessary extra treatment to provide proper paint base.
- C. Metals-General:
 - 1. On metal work, only such sanding will be required as is necessary to provide for complete bonding of coats.
 - 2. Steel and ironwork shall be scraped clean of scale, and rust and any grease shall be entirely removed.
 - 3. Touch-up scratched and damaged places on metal priming coats.
 - 4. Galvanized or zinc-coated metal shall be given an approved acid treatment 48 hours before paint is applied.
 - 5. Prep and prime coat factory or shop primed metal products, including metal doors and frames, exposed framing, and other exposed metal if material was not shop primed.

6. Metal surfaces receiving epoxy coatings shall have stripe coat applied at all welds, edges, joints, etc., with epoxy primer prior to application of primer.

D. Metals—Galvanized Surfaces:

1. Surfaces shall be cleaned, and profiled where specified, prior to receiving applied coatings in accordance with ASTM D6386 or ASTM D7396 for sheet products.
 - a. Methods shall be selected based on age of galvanized coating, condition of surface and intended paint coating.
 - b. Care shall be taken not to damage the zinc coating.
 - c. Do not use phosphate treatment on galvanized surfaces scheduled to receive zinc-rich primers.
2. Comply with additional recommendations included in the AGA document "Duplex Systems: Painting Over Hot Dip Galvanized Steel."
3. Comply with any additional procedures required by the coating manufacturer.

E. Gypsum Board:

1. General:
 - a. Fill narrow, shallow cracks and small holes with spackling compound.
 - 1) Rake deep, wide cracks and deep holes.
 - 2) Dampen with clear water.
 - b. Fill with thin layers of drywall joint cement.
 - c. Allow to dry.
 - d. Sand smooth after drying. Do not raise nap of paper on gypsum board.
2. Gypsum Board to Receive Wall Covering and Carpeting:
 - a. Prep and prime surfaces scheduled to receive wall covering with scheduled primer. Refer to Section 09 7200, Wall Covering, for clear acrylic primer to be used at vinyl wall covering.
 - b. Sprayed applications of primer shall be back rolled to assure that the primer has thoroughly sealed the surface.

F. Concrete:

1. Cracks, gaps, hollow areas, bug holes, honey combs, voids, fins, form marks and other protrusions or rough edges are to be ground or stoned to provide a smooth continuous surface.
2. Imperfections may require filling.
 - a. Patch concrete areas with cracks, gaps, hollow areas or other imperfections with compatible material to provide smooth continuous surface.
 - b. Material shall be compatible with and as recommended by the coating manufacturer.
3. Moisture Content:
 - a. Prepared surfaces shall not be painted until they have completely cured and have stabilized moisture content within limits required by the coating manufacturer.

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- b. Testing for Moisture Vapor Emission Rate (MVER) shall be performed to verify suitability using a moisture meter, Delmhorst or equal, or method described in ASTM D4263.
- 4. Surface shall be reviewed by Architect after surface preparation is complete and prior to application of primer. Additional patching and/or grinding necessary to provide a visually acceptable surface after application of paint coatings shall be accomplished at no additional cost.
- G. Surfaces that cannot be prepared or painted as specified, or to level required by the coating manufacturer, shall be immediately brought to the attention of the Architect, in writing.
 - 1. Starting of work without such notification will be considered acceptance by the Contractor of surfaces involved.
 - 2. Replace unsatisfactory work caused by improper or defective surfaces, as directed by Architect.

3.3 CAULKING

- A. Caulk all cracks in finished surfaces.
- B. Seal around any wall openings where original sealant is not fully sealing.
- C. Provide sealant at material transitions and intersections as required.

3.4 PROTECTION

- A. Hardware, fixture canopies, outlet covers, switch plates and other such items shall be removed or loosened and replaced after completing work as required for painting and finishing. Protect items until reinstalled.
- B. Protect work and work of others during progress against damage. Leave such work clean and whole. Correct damage by cleaning, repairing, replacing or repainting as directed.
- C. Provide necessary drop cloths for protection of work. Cover finished surfaces adjacent to work.

3.5 APPLICATION

- A. General:
 - 1. Do not apply initial coating until moisture content of surface is within limitations recommended by paint manufacturer.
 - 2. Apply coatings in accordance with manufacturer's recommendations and the additional requirements, as applicable, of the Architectural Painting Manual Guide Specifications for application methods and paint systems.
 - 3. Flow coat on evenly and well brushed in. Should dead spots occur, touch-up before next coat is applied. Should spots or cracks burn through after final coat is applied, apply additional coats to entire surface as necessary to remedy defects.

- 4. Rate of application shall be within limits recommended by paint manufacturer for surface involved.
- B. Thicknesses: Rate of application shall be within limits recommended by paint manufacturer for surface involved and comply with the following.
 - 1. Paint materials shall be applied in manner to average 1.5 to 3 Dry Mills in thickness for the total number of coats scheduled.
 - 2. Provide Tooke Dry Mill Coating Inspection Gauge manufactured by Micro Metrics Company to the Project Inspector for inspection of finished coating systems, if requested.
- C. Refinish whole area where portion of finish is not acceptable.
- D. Adjust natural finishes as necessary to obtain identical appearance on veneers and solid stock.
- E. Equipment adjacent to walls shall be disconnected, using workers skilled in appropriate trades, and moved to permit wall surfaces to be painted. Following completion of painting, they shall be expertly replaced and reconnected.
- F. Top and bottom edges of all doors shall receive same paint system finish required for door faces.
- G. Do not paint over fire-rating labels, fusible links, or sprinkler heads.

3.6 DEFECTIVE WORK

- A. Painter shall be responsible for damage or unsuitable work, including that caused by improperly prepared surfaces. Refinishing shall be at no cost to the Owner. Repair work damaged during construction; touch-up or refinish as necessary any abraded, stained or otherwise damaged surfaces.

3.7 CLEANING AND PROTECTION

- A. Thoroughly clean any drips, splatters, spills, splashes, etc., from walls, floor or other surfaces, with no damage to those surfaces.
- B. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- C. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.8 PAINT SYSTEMS

- A. General:
 - 1. Only major areas are scheduled, but miscellaneous and similar items and areas within room or space shall be treated with suitable system.

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2. This Specification shall serve as guide and is meant to establish procedure and quality. Confer with the Architect to determine exact finish desired.
3. Number of coats scheduled is minimum. Additional coats shall be applied at no additional cost as required to hide base material completely, produce uniform color, and provide required and satisfactory finish.

B. Gloss and Sheen Ratings: Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following limits in conformance with Master Painters Institute, Inc. (MPI) Standards according to ASTM D523. Not all of the Gloss Levels are necessarily scheduled or used on this Project.

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 max.
G2	Velvet finish	0 to 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	35 min.
G5	Semi-Gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-Gloss finish	> 85	

C. Clarification of System Terminology:

1. Interior paint Systems are specified and identified herein by initial letters "INT."
2. Exterior paint Systems are specified and identified herein by initial letters "EXT."
3. The numbers following "INT" and "EXT" for each System identifies the substrate to be coated.
4. Initial numbers for each System identify the substrate to be coated summarized as follows with further clarification included with the System description:

CODE	DESCRIPTION
3.1	Concrete
3.2	Cement Plaster
4	Masonry
5	Metal
6	Wood
9.2	Gypsum Board
9.3	Acoustical Panels and Tile

5. The letter following substrate number identifies the general finish coat chemistry summarized as follows:

CODE	DESCRIPTION
A	Standard acrylic
B	Non-bridging vinyl acrylic
C	Epoxy-like acrylic
D	Semi-transparent stain
E	Elastomeric
F	High performance epoxy-like acrylic

CODE	DESCRIPTION
G	Lacquer
H	Aliphatic urethane
I	Fire Retardant Intumescent
J	Acrylic Urethane
K	PVA primer
L	Acrylic primer
M	Premium performance acrylic polymer

6. Hyphenated suffix identifies the topcoat gloss level.

3.9 INTERIOR PAINTING SYSTEMS

INT 5.2A-5

Acrylic on Shop Primed Metal Including Hollow Metal Doors & Frames - Gloss Level 5
 2 coats "Pro Industrial" B66-650 Series Acrylic Semi-Gloss

Note: Modify scheduled finish coat if higher or lower gloss level is selected by Architect.

INT 5.2M-5

Premium Performance Acrylic on Exposed Metal - Gloss Level 5

Coating Manufacturer: Products specified to establish required level of performance, quality, and appearance are by Carboline.

1 coat	"Carboguard 3358"	Waterborne acrylic
1 coat	"Carboguard 3359"	Waterborne acrylic

Note: Provide additional topcoat if required to achieve complete hiding.
 Modify scheduled topcoat if other than specified gloss level is selected by Architect.

INT 6.4A-5

Acrylic on Plywood - Gloss Level 5

1 coat	"PrimeRx" B51T00600	Acrylic Bonding Primer
2 coats	"Pro Industrial" B66-650 Series	Acrylic Semi-Gloss

INT 9.2IL-1

Primer on Gypsum Board to Receive Vinyl or Fabric Wall Covering

Clear Acrylic	As specified in Section 09 7200, Wall Covering
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INT 9.2A-3

Acrylic on Gypsum Board, textured finish - Gloss Level 3

1 coat	"ProMar 200" B28W2600	Latex Primer
2 coats	"ProMar 200" B20-2600 Series	Acrylic Latex Eggshell

INT 9.2A-5

Acrylic on Gypsum Board, smooth finish - Gloss Level 5

1 coat	"ProMar 200" B28W2600	Latex Primer
2 coats	"ProMar 200" B31-2600	Latex Semi-Gloss

Note: Provide additional topcoat at toilet rooms and food service areas.

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3.10 MISCELLANEOUS PAINTING

- A. Mechanical and Electrical Equipment, Conduits and Piping: Paint exposed items as scheduled using appropriate system for material and whether or not item has been factory-primed.
- B. Exposed Insulation-Covered Piping: Size with Arabol, or equal latex type adhesive, and apply 2 coats of semi-gloss enamel.
- C. Material Visible through Grilles, Screens, Louvers, Vents and Screens and Exposed Hardware Cloth Screening: Painted flat black to make them as unnoticeable as possible.
- D. Mechanical Equipment: Paint mechanical equipment housings where indicated on the Drawings.

END OF SECTION

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Last Updated: January 26, 2022

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Code required signage.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Division 23, Mechanical.
- D. Division 26, Electrical.
- E. Signage requirements included on the Drawings.

1.3 REFERENCES AND STANDARDS

- A. California Building Code, edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on drawings, as adopted by the California Division of the State Architect (DSA).
- C. Title 19, CCR, Article 33.01(i).
- D. American National Standards Institute (ANSI):
 - 1. A-117.1: Accessible and Usable Buildings and Facilities.
- E. ASTM International (ASTM):
 - 1. A53/A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. A153/A153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.

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2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

B. Coordination:

1. Prior to production of shop drawings and samples, coordinate a pre-submittal conference with Architect to confirm submittal requirements, schedule, and sign review process.
2. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs. Provide template for placement of sign-anchorage devices **[and electrical service]** embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

A. Shop Drawings:

1. Scaled drawings and signage schedule for each sign indicating materials, lettering layout, and colors.
2. Font Style. 18 point graphical example of alphabet and numerical numbers 0 through 9 of signage font style, upper and lower case letters, punctuation, 18 point scale, and black text on white paper.

B. Product 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. Samples:

1. Submit three samples of specified signage fonts to be used for visual and tactile characters including braille below the raised characters.
2. Color Verification: Provide physical sample of each available color from the manufacturer. Include color system name and serial number, code and name as applicable.
3. Control Samples. Samples shall be prepared on same base material to be used in fabrication. Submit one sample of each sign type. Signage types are indicated in Construction Document details. Interior signs shall be full size.
4. Dimensional Letters: One full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment.
5. Symbol of Accessibility and Pictograms. Full scale sample of pictograms and symbol of accessibility to be used on sign panels and graphics.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installer.

- B. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
- C. Sample of manufacturer's warranty.
- D. Signage Schedule and Alphanumeric Nomenclature. As a component of shop drawings and informational submittals, verify with Architect the sign nomenclature; room names and numbers; wording of way-finding, directional and informational signage; text; and orientation of wayfinding pictorial graphics.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Maintenance data for signs and sign types including maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Contractor shall assure that the vendor shall be responsible for the quality of materials and workmanship of any firm acting as the vendor's subcontractor.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Use materials and products of one manufacturer whenever possible.
- D. 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.
- E. The adhesion of inlaid letters and symbols will be tested. See Article WARRANTY.
- F. Mockups:
 - 1. Prior to installation, install pre-installation paper mockup signs for review at locations designated by Architect. The job-site review is to confirm compliance with the information included on the Drawings, typical installation conditions, and determine installation locations for non-typical conditions.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

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- 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.

1.10 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

1.11 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's available fully executed written warranty for signage against all defects in materials and workmanship, including without limitation against yellowing, cracking, crazing, and other visible and performance defects for a period of 5 years.
 - 1. Text, pictograms or symbols that can be removed from the sign face utilizing a sharp object or other conventional methods will be considered a manufacturing defect.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Regulatory Standards:
 - 1. Except as otherwise specified or shown, signage shall conform to the following:
 - a. ANSI A-117.1 and the Americans with Disabilities Act (ADA).
 - b. ATBCB Design Guidelines for Signage in relation to the Americans with Disabilities Act.
 - c. California Code of Regulations, Titles 19 and 24.
 - 1) Contracted Grade 2 Braille shall be used whenever Braille symbols are specifically required. Refer to CBC Section 11B-703.3.
 - 2) All signage shall conform to CBC Section 11B-703.
 - d. Uniform Sign Code.
 - 2. When there is a conflict between the CBC and ADA, comply with the most stringent.
- B. Design Criteria: Refer to Chapter 11B of the California Building Code.
 - 1. Raised Characters: Section 11B-703.2.
 - a. Depth: Section 11B-703.2.1.
 - b. Case: Section 11B-703.2.2.
 - c. Style: Section 11B-703.2.3.
 - d. Character Proportions: Section 11B703.2.4.

- e. Character Height: Section 11B-703.2.5.
- f. Stroke Thickness: Section 11B-703.2.6.
- g. Character Spacing: Section 11B-703.2.7.
- h. Line Spacing: Section 11B-703.2.8.
- i. Installation Height and Location: Section 11B-703.4.
- 2. Braille: Section 11B-703.3.
 - a. Contracted (Grade 2) Braille with rounded or domed dots shall be used wherever Braille is required.
 - 1) Braille dimensions in accordance with Table 11B-703.3.1.
- 3. Visual Characters: Section 11B-703.5.
 - a. Character Proportions: Section 11B-703.5.4.
 - b. Stroke Thickness: Section 11B-703.5.7.
 - c. Character Spacing: Section 11B-703.5.8.
 - d. Line Spacing: Section 11B-703.5.9.
- 4. Pictograms: Section 11B-703.6.
 - a. Pictogram Field: 11B-703.6.1.
 - 1) Characters and Braille shall not be located in the pictogram field.
 - b. Finish and Contrast: Section 11B-703.6.2.
 - 1) Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field.
 - c. Text Descriptors: Section 11B-703.6.3.
 - 1) Locate text descriptors directly below the pictogram field.
 - 2) Text shall be raised characters with braille directly below.
- 5. International Symbol of Accessibility: Section 11B-703.7.2.1.
- 6. Toilet Room Door Symbols: Section 11B-703.7.2.6.
- 7. Tactile Exit Signs: Tactile exit signage to comply with 1013.4 and 11B-703.4.

C. Sustainable Design:

- 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.2 PLASTIC SIGNS - TACTILE

A. Materials, Unless Otherwise Noted:

- 1. Manufacturer and Product: "Inlaid Tactile Sign" by Accent Signage Systems, Inc. Minneapolis, MN, 800-215-9437 as specified and the basis of design; Ellis & Ellis Sign Systems, Sacramento, CA, 916-924-1936; ASI-Modulux, Los Altos, CA, 650-940-1354; Weidner Architectural Signage, Sacramento, CA; or equal.
 - a. Sign Face: Two 1/8-inch plies with eased edges; New Hermes "Gravo-Tac," or equal.
 - 1) Total Thickness: 1/4 inch.

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- 2) Painted signs will not be accepted.
- b. Tactile Text: Provide tactile text and "Raster" Braille at plastic tactile signage.
 - 1) Tactile text shall be inlaid into sign face 1/32-inch and raised 1/32- inch minimum above sign face surface.
 - 2) Inlaid text shall be 1-ply, 1/16-inch thick material; "Gravo-Tac" Exterior or equal.
 - 3) Provide text and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position and colors.
 - 4) Symbols where specified shall be International Style.
 - 5) Braille shall be Contracted (Grade 2) Braille.
 - a) Dots shall be 0.10-inch on centers in each cell, 0.30-inch on center between corresponding dots in adjacent cells, and 0.395-inch minimum to 0.400-inch maximum on center between corresponding dots in cell directly below.
 - b) Dots shall be raised a minimum of 0.025-inch and a maximum of 0.037-inch above the background, and a base diameter of 0.059-inch minimum and 0.063- inch maximum.
 - c) Dots with straight sides and flat tops are not acceptable.
- c. Colors: High contrast, non-glare, integral colors for graphics.
 - 1) Integral materials shall be U.V. stabilized.
 - 2) Characters, symbols and pictograms shall be in high contrast (light color) with background (dark) color and must conform to the CBC and the ADA Standards.

B. Fabrication:

1. Panel Appearance: Manufacturer's standard, high contrast, semi-matte colors.
2. Surface Texture: Matte Non-glare.
3. Character Style, Size and Layout Position:
 - a. Characters shall be 1-inch high, unless otherwise indicated.
 - b. The stroke of the uppercase letter "I" shall be 15 percent maximum of the height of the character.
 - c. The width of the uppercase letter "O" shall be 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
 - d. Character style to be Sans Serif, uppercase, accompanied by Braille directly below text at all locations where raised characters are required.
 - e. Spacing between baselines of separate lines of raised characters with a message shall be 135 percent minimum and 170 percent maximum of the raised character height.
4. Text Schedule: Confirm text, symbols and numbering with the Architect and Owner.

5. Sign Size: As indicated on the Drawings or, if not shown, as reasonably required to accommodate text, symbols and Braille.
 - a. Where signs are installed on window glazing, fabricate a blank sign back to match in size and shape to sign.
 - b. Sign backs shall cover back side of sign from view through window on opposite side of sign.
 - c. Signs that are mounted back-to-back on glazing are to be matching in size; the smaller sign is to be increased in size as reasonably required to match the larger sign.
 6. Sign Shape: As indicated on the Drawings.
 - a. Corners: Radiused, unless otherwise shown.
 7. Inlaid Letter Adhesion Process: Inlaid material shall be adhered into 1/32-inch deep routed sign face utilizing the heat and pressure bonded/chemically welded process as developed by Accent Signage Systems for the specified "Inlaid Tactile Sign."
 - a. Sign manufacturers for the specified "Inlaid Tactile Sign" shall be familiar with and utilize the exact same manufacturing process developed by Accent Signage Systems.
 - b. Manufacturer must utilize the same and required equipment, products and techniques necessary to produce authentic "Inlaid Tactile Signs" as developed by Accent Signage Systems.
 - c. Other adhesive products and methods, including applied adhesive tapes will not be accepted.
- C. Sign Types: Provide braille translation directly below the raised characters.
1. Room Identification Sign: Provide as shown on the Drawings.
 - a. Provide name and room number at each door indicated.
 - b. Names and numbers to be reviewed and approved by Architect and Owner prior to fabrication.
 - c. Allow an average of 4-numbers and 14-letters for each sign.
 - d. Sign to be provided adjacent to doors as shown.
 2. Tactile Exit Sign:
 - a. Provide with text in raised characters to read: "EXIT".
 3. Tactile Exit Route Sign:
 - a. Text to Read: "EXIT ROUTE."

2.3 PLASTIC SIGNS - NON-TACTILE

- A. Materials, Unless Otherwise Noted:

Manufacturer and Product: Acrylic panel sign as manufactured and distributed by Ellis & Ellis Sign Systems, 916-924-1936, as specified and the basis of design, or equal.

1. Sign Face: 1/4-inch, matt finish, non-glare acrylic with subsurface vinyl and paint. Painted faces will not be accepted.

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2. Colors: Colors shall match specified Tactile Signs and as selected by Architect and Owner.
 - a. Integral materials shall be U.V. stabilized.
 - b. Graphics and text shall be in high contrast (light color) with background (dark) color.

B. Fabrication:

1. Sign Thickness: 1/4-inch.
2. Character Style, Size and Layout Position:
 - a. Characters shall be a minimum of 1-inch high, unless otherwise indicated.
 - b. The stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 20 percent maximum of the height of the character.
 - c. The width of the uppercase letter "O" shall be 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
 - d. Letter style to be Sans Serif, uppercase.
 - e. Space characters 10 percent minimum and 35 percent maximum of height of characters, measured between two closest points of adjacent characters, excluding word spaces.
 - f. Spacing between baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of character height.
3. Text Schedule: Confirm text, symbols and numbering Architect and Owner using the shop drawing/submittal process.
4. Sign Size: As indicated on the Drawings or, if not shown, as reasonably required to accommodate text and symbols.
 - a. Where signs are installed on window glazing, fabricate a blank sign back to match in size and shape to sign.
 - b. Sign backs will cover back side of sign from view through window on opposite side of sign.
5. Sign Shape: As indicated on the Drawings or, as reasonably required to accommodate the specified text and size at lettering.
 - a. Corners: 1/4-inch radius, unless otherwise shown.

C. Sign Types:

1. Ceiling Live Load Capacity Sign:
 - a. Text: "20 PSF MAXIMUM LIVE LOAD DESIGN FOR CEILING."
 - b. Height of Letters: 1-1/2 inches.
 - c. Provide at Stage, where approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 INSTALLATION OF SIGNS

- A. General: Locations of signs must be in accordance with the Drawings and approved shop drawings.
- B. Plastic Signs:
 - 1. General:
 - a. Provide both mechanical fasteners and either adhesive or 2-sided adhesive tape as recommended by manufacturer for given mounting substrate.
 - b. Fasteners: Minimum 4-recessed flush head tamper-proof (vandal-resistant) screws per sign.
 - 2. Wood and Metal Framed Walls: Mechanical fasteners shall be of adequate length to penetrate exterior finishes and provide secure embedment into wall structure or sheathing.
 - 3. Masonry Walls:
 - a. At split-face concrete masonry (CMU) walls, Contractor shall be responsible for providing a "bushed-down," level, rectilinear, and smooth, area, 1/2-inch larger than sign all around for flush sign mounting.
 - b. Contractor shall not grind or prep CMU wall until signs are on site and exact sign size and location are verified and approved by Architect.
 - 4. Glass:
 - a. Utilize mounting adhesive and silicone where signs are mounted to glass.
 - b. Provide vinyl window sign backer to match sign face size, mounted on opposite side of glass.
 - c. Signs mounted back-to-back are to be matching in size.
 - d. Do not pre-drill signs for mechanical fastening where sign is to be mounted to glass.
- C. Other Signs: Use mounting method that is permanent, vandal resistant, and has been approved by the Architect.

3.3 PROTECTION

- A. Protect work and materials of this Section and other Sections prior to and during installation, and protect the installed work and materials of all other trades.

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- B. 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.

3.4 ADJUSTING AND CLEANING

- A. Remove all dust, dirt, finger marks, etc. from signs and letters using cleaning methods as recommended by manufacturer.

END OF SECTION

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Last Updated: March 30, 2021

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manufactured, plastic-laminate-faced, modular casework and accessory items.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Content Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 05 4000, Cold-Formed Metal Framing, for blocking and backing.
- D. Section 06 1000, Rough Carpentry, for blocking and backing.
- E. Section 09 2900, Gypsum Board.
- F. Section 09 9100, Painting.
- G. Section 12 3623, Plastic-Laminate-Clad Countertops.
- H. Division 26, Electrical, for electrical outlets and fittings built into architectural casework.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as note on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. American National Standards Institute (ANSI):
 1. ANSI A208.2: Medium Density Fiberboard for Interior Use.
 2. ANSI/BHMA A156.9: American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association.
 3. ANSI/BHMA A156.18: American National Standard for Materials and Finishes; Builders Hardware Manufacturers Association.
- D. National Electrical Manufacturers Association (NEMA):
 1. NEMA LD3.1: "High-Pressure Decorative Laminates."
- E. Woodwork Institute (WI)/ Architectural Woodwork Manufacturers of Canada (AWMAC):

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1. North American Architectural Woodwork Standards (NAAWS).

1.4 DEFINITIONS

- A. General: The following definitions are in conformance with those included in the referenced NAAWS document.
- B. "Exposed Exterior" surfaces include all surfaces visible when doors and drawers are closed.
 1. Bottoms of casework more than 4 feet above the floor will be considered an exposed surface.
 2. Tops of casework that are visible by building occupants from stairs, mezzanines or other elevated locations will be considered as exposed.
- C. "Exposed Interior Surfaces" surfaces exposed to view in open casework or behind glass doors.
- D. "Semi-Exposed Surfaces" are interior surfaces only exposed to view when doors or drawers are open.
- E. "Concealed Surfaces" include surfaces of sleepers, web frames, dust panels, and other surfaces that are not visible after installation.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 2. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
 3. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
- B. Scheduling and Coordination:
 1. Require casework fabricator to examine the schedule and check it for timing, accuracy and compatibility with its work and shall coordinate work with the master schedule and job superintendent.
 2. Require casework fabricator to furnish assistance in coordination and scheduling of other work pertinent to casework installation and to notify Contractor of requirements so as to result in a well-coordinated job.

1.6 ACTION SUBMITTALS

- A. Shop Drawings:
 1. Submit dimensioned plans, elevations, component profiles, and details for each casework layout showing the following:

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- a. Locations and type of service fixtures with lines thereto; anchorage locations, installation details to floors and walls.
 - b. Relationship of units in to surrounding and adjacent construction including walls, doors, and windows.
 - c. Swing of doors.
 - d. Shelving.
 - e. Accessory items such as fillers, end panels, and valance.
 - f. Base height.
2. First page of shop drawings and each elevation shall bear an individually serial-numbered WI "Certified Compliance Label."
- B. Product Data:
1. Provide manufacturers cut sheets for all materials proposed for use including:
 - a. Panel products.
 - b. Cabinet hardware items.
 - c. Laminates.
 2. Include manufacturer's literature for items which are proposed for use and specified herein only by listing the intended performance requirements.
- C. Samples: The following samples are required.
1. Each type of high pressure laminate (HPL), edge banding, cabinet liner, and melamine-faced panel.
 - a. Plastic laminate and edge banding to be selected from manufacturers' full range of colors by Architect.
 2. Hardware: Adjustable shelf clip, hinge, pull, magnetic catch, elbow catch and lockset. Returned hardware samples may be used on the project unless otherwise noted by the Architect.

1.7 INFORMATIONAL SUBMITTALS

- A. Before delivery of casework to jobsite, submit a WI "Certified Compliance Certificate" listing the items certified, the applicable NAAWS Grade, and whether installation is included.
- B. Qualification Data: For installer.
- C. Sample of manufacturers' warranty.
- D. Sustainable Design:
 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 2. The following information shall be provided:

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- a. Composite Wood: Evidence of compliance that products meet formaldehyde limits of current CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.
- b. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.8 CLOSEOUT SUBMITTALS

- A. Warranty: Submit executed warranty.
- B. Specified maintenance materials.

1.9 MAINTENANCE MATERIAL SUBMITTALS

- A. Provide additional materials as follows:
 - 1. Hinges: 10 each.
 - 2. Pulls: 10 each.
 - 3. Cabinet Locks: 10 each.
 - 4. Adjustable Shelf Supports: 25 each.
- B. Deliver to Owner as directed.

1.10 QUALITY ASSURANCE

- A. General:
 - 1. Furnish all components and accessories and all allied products new and free from defects.
 - 2. To assure proper coordination and eliminate divided responsibility, all work specified in this Section shall be executed under the direction of a single manufacturer and supplier.
- B. Qualifications:
 - 1. Manufacturer: The casework manufacturer must have not less than 5 years of production experience similar to this project, and the specified product, and whose qualifications indicate the ability to comply with the requirements of this section.
 - 2. Installer: The installer must have at least one project in the past 5 years with similar systems and complexities to those required for this project, and where the value of the woodwork is a minimum of 80% of the cost of woodwork for this project.
- C. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- D. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.

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- E. 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.
- F. Casework Designations:
 - 1. Reference numbers on Drawings are related to NAAWS Cabinet Design Series (CDS) Elevation numbers, and are used to identify prefinished casework and to indicate dimensions, general design, equipment, shelving (adjustable and fixed) and other components to be furnished. Unless modified by notation on Drawings, description for indicated number shall constitute requirements for such cabinets incorporating all features set forth in the NAAWS CDS Elevations.
 - 2. Use of the NAAWS CDS Elevations numbers, and specific requirements set forth on the Drawings and as specified, are not intended to preclude use of other manufacturer's product or procedure, which may be equal thereto, but are given to establish standard of design and quality of materials, construction and workmanship.
- G. Proof of compliance with the specified NAAWS Grade assembly and installation shall be provided by the following WI Quality Control Program:
 - 1. WI Certified Compliance Program:
 - a. Casework and the installation thereof for this Project shall be certified by fabricator for compliance to the Contract Documents.
 - b. WI licensees shall issue a Certified Compliance Certificate indicating the casework products being furnished and certifying that these products and their installation will fully meet all the requirement of the WI Grade specified. Certificate shall be submitted prior to delivery of casework to the jobsite.
 - c. Non-licensees of the WI shall arrange to have a WI Inspector inspect the casework after completion of fabrication and installation and furnish a Certified Compliance Certificate. Contractor shall be responsible for all costs associated with corrections to fabricated or installed work as required to secure the WI Certified Compliance Certificate.
 - d. Casework and/or installation determined to be non-compliant by WI and not corrected will be rejected.
 - e. Each elevation of casework shall bear the WI Certified Compliance Label placed at an inside face of the casework unit furthest to the right in elevation.
 - f. Fees charged by WI to either WI licensee or non-licensee are the responsibility of the Contractor.
 - g. At completion of installation the Contractor shall provide a Woodwork Institute Certified Certificate indicating the products installed, and certifying that the installation of these products fully meets the requirements of the Grade or Grades specified. Issuance of the WI Certified Compliance Certificate is a prerequisite of the Architect's final acceptance.
- H. Mockups: Provide mockup of one base cabinet and one wall hung cabinet to verify finish material selections, modifications made under sample submittals, and to demonstrate aesthetic effects and set quality standards for materials and execution for cabinet exteriors, interior construction, and hardware.

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1. The base cabinet is to have at least one drawer and be of the same material to be provided for the project.
2. The approved mockup may be incorporated in the project.

1.11 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 accordance with the manufacturer's recommendations.
- D. Do not deliver until wet operations in building are completed and storage area is closed in and broom clean, with relative humidity 50 percent or less at 70 degrees F.
- E. Deliver in sections to fit through openings.

1.12 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Products shall be available at project when required for installation so as not to delay job progress. Installer for these products shall cooperate with installers performing work under other sections involved to effect proper installation.
- C. Casework fabricator shall coordinate installation of any Owner supplied equipment where indicated on the Drawings.
- D. Field Measurements: Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

1.13 WARRANTY

- A. Manufacturer: In addition to the Contractor's Standard Guarantee, furnish Owner with manufacturer's fully executed written 5-year warranty for casework against defects in materials and workmanship. Warranty shall include against delaminations, joint separations, warp or twist in doors more than 1/4 inch, and splits or cracks in finished surfaces.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:

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1. Composite wood products must meet current formaldehyde emission limits of CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.
2. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

2.2 PANEL MATERIALS

- A. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 155, formaldehyde-free, and meeting grade MR30 moisture resistance; "Medite II," by Roseburg, or equal.
 1. Thickness: 3/4 inch, unless otherwise shown or specified.
- B. Thermally-Fused Melamine Panels (TFM): Melamine resin-impregnated decorative paper thermally fused to a formaldehyde free MDF core.
 1. Color: White, unless otherwise noted or selected by Architect from a minimum of 6 colors.
- C. Plywood: Exterior type, Grade B-C or better. Plywood to be free of urea-formaldehyde.
- D. Hardboard: Tempered Grade, conforming to standards of American Hardboard Association or PS-50; use smooth side exposed.
- E. Particle Board: Not permitted.

2.3 LAMINATE MATERIALS

- A. High-Pressure Plastic Laminate: Conforming to NEMA LD3.1 and ISO 4586-2.
 1. Grades:
 - a. Horizontal Surfaces: ISO 10/HGS; horizontal, general purpose, standard.
 - b. Vertical Surfaces: ISO 20/VG; vertical, general purpose.
 - c. Cabinet Liner (If Specified TFM Panel is Not Used): ISO 72/CLS, cabinet liner, standard.
 - d. Backing Sheet: ISO 91/BKL; backer, light duty.
 2. Manufacturers: Formica, Wilsonart, Arborite, Pionite, Nevamar, or equal.
 3. Colors, and Patterns:
 - a. Exposed: As selected by Architect from manufacturer/suppliers' full product color range.
 - 1) There will be no additional cost allowance for premium color selections, or for selection of different colors for different rooms up to a maximum 6 colors.
 - 2) Doors and frames may be different selections.
 - b. Cabinet Liner: White.

2.4 ADDITIONAL MATERIALS

- A. Edge Bandings:

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1. 3-mm thick PVC: Solid, high impact, purified, color-thru, acid resistant, pre-laminated primed edging, machine-applied with hot melt adhesives, automatically trimmed, inside/outside length-radiused for uniform appearance, buffed and corner-radiused for consistent design.
 - a. Locations: Door and drawer face edge, and exposed shelf edge.
 - b. Color: As selected by Architect from manufacturer's full range of standard colors.
2. 0.02-inch thick PVC: Flat Edge, solid, high impact, purified, color-thru, acid resistant PVC, edging machine-applied with hot melt adhesives, automatically trimmed face, back and corners for uniform appearance.
 - a. Locations:
 - 1) Drawer body edge, not drawer face, and cabinet body edge including door and drawer front spacer rail.
 - 2) Interior body component edging, interior dividers and interior shelving.
 - b. Color: Match cabinet interior surface color.

2.5 HARDWARE

- A. Comply with requirements of BHMA A156.9, Type 2 (Institutional).
- B. Finishes:
 1. Exposed Items: Satin chromium plated, 626, unless otherwise noted complying with ANSI/BHMA A156.18.
 2. Concealed Items: Manufacturer's standard finish, complying with applicable product class of ANSI/BHMA A156.9.
- C. Hinges:
 1. Blum CLIP top series, or equal.
 2. Quantity:
 - a. One pair per door to 48 inches in height.
 - b. One and one-half pair 48 inches in height to 84 inches in height.
 - c. Over 84 inches in height, provide 2 pair of hinges.
- D. Door and Drawer Pulls: Hafele, U-Shaped Wire Pull, stainless steel finish, or equal.
- E. Magnetic Catches: Häfele 246 with matching strike plate, matt nickel finish, or equal.
- F. Locks: Sugatsune, Million Locks, 6830-30MK, Mortised or equal.
 1. All cabinets in each Room to be keyed alike.
 2. All Rooms to be keyed different.
 3. Locations: As indicated on the Drawings.
- G. Drawer Guides: Accuride as specified, or equal:
 1. Drawers Less Than 24 inches Wide: Light duty, full extension; Model 3732.

- a. Provide appropriate length.
 - b. Load Rating per Pair: 100-pounds.
- 2. Drawers 24 inches to 36 Inches Wide: Medium duty with 1-inch over travel; Model 3301.
 - a. Provide appropriate length.
 - b. Load Rating per Pair: 150-pounds.
- 3. Drawers 36-inches to 42-inches Wide: Heavy-duty with 1-inch over travel; Model 3634.
 - a. Provide appropriate length.
 - b. Load Rating per Pair: 200-pounds.
- H. Adjustable Shelf Supports: Recessed heavy-duty steel pilaster standards and supports by Knappe & Vogt.
 - 1. Mortised-Mount Standard: No. 255.
 - 2. Shelf Support Clip: No. 256R.

2.6 ADDITIONAL MATERIALS

- A. Bumper Pads (Silencers): Hemispherical, quiet clear type, 55 Shore A hardness; 3M Bump-on Protective Products, or equal.
- B. Adhesive: As recommended by panel manufacturer best suited for the intended use and that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use that has a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Fasteners: Size and type to suit application in accordance with specified standards and as required.

2.7 FABRICATION - GENERAL

- A. Construction shall conform to NAAWS casework requirements.
- B. Make job measurements as required for proper fabrication of the work.
- C. Grade: Custom. If provisions for the NAAWS Grade are in conflict with, or modified by the drawings and/or specifications, the modifications shall govern.
- D. Door and Drawer Front Style: Flush overlay, NAAWS Style A.
- E. Carcass Construction: Type A frameless. Provide as single unit at open shelving to greatest extent possible.

2.8 FABRICATION OF CABINET COMPONENTS

- A. Cabinet Bodies:

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1. Fabricate, assemble and finish each cabinet as complete, self-supporting unit.
 - a. Unless otherwise shown, counter height and tall storage units shall be 24 inches minimum overall depth; wall-hung units shall be 15 inches minimum overall depth.
 - b. At concealed locations, provide tops on all wall-hung and tall cabinets utilizing melamine on both faces.
 - c. At locations where the tops of wall hung or tall cabinets are visible, provide tops on all wall-hung and tall cabinets utilizing HPL on exterior face and melamine on interior face.
 - d. Fabricate bottoms, tops and frames of lock-joint glued and screwed, or dowelled and glued construction to end panel construction. Simple butted not permitted.
 - e. Tops and sides of tall units and wall-hung cabinets shall be 3/4-inch thick MDF core.
 - f. Bottoms of upper cabinets shall be constructed of same materials as specified for shelving.
 - g. Tall cabinets and base cabinets, fronts and sides shall be 3/4-inch thick MDF core.
 - h. Cabinet backs shall be a minimum of 1/4-inch thick.
 - i. Dowel and screw partitions and boxed shelves into top framing, bottoms or ends, as applicable.
 - j. Middle shelf of tall cabinets, 5 feet or greater in height, shall be fixed.
 - k. At top of counter height units, provide 3/4-inch plywood boxed subframe, mortised and tenonned, glued and screwed, for concealed attachment of countertop and for cabinet rigidity.
 - l. Provide toe space on floor-mounted units.
 - m. For tall units and wall-mounted cabinets, include 5/8 inch x 3 inch concealed wood strips full length at top and bottom, for screw or bolt anchorage to wall to conform to pull requirements of Title 24.
 - n. Holes for Shelf Support Clips: 32mm on center.
 - 1) Provide 2 holes on each side of shelf except provide a 3rd hole where cabinets are deeper than 24 inches.
 - 2) Locations shall be confirmed with Architect.
 - o. The fabrication of casework must allow for shim space at the base of the cabinets, to account for field conditions, as required so that the height from finish floor to top of counter, and sink rim where occurs, does not exceed the specified height at any location along the countertop after installation.
2. Finishing:
 - a. Exposed Interior Surfaces and Semi-Exposed Surfaces:
 - 1) Melamine bonded to MDF core; specified TFM panel.
 - 2) Use for all semi-exposed surfaces, tops and bottoms of wall-hung and tall cabinets except as otherwise specified, concealed ends, partitions, and drawer boxes.
 - 3) See "Shelves" Paragraph for panel and finish requirements for shelving.

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B. Drawers:

1. Fabrication:

- a. Fabricate and assemble drawer boxes with subfront and back glued and screwed into tenons at drawer sides.
- b. Fronts shall be 3/4 inch thick MDF.
- c. Sides: 1/2 inch thick MDF to create drawer box subfront, sides, back and bottom.
- d. Extend bottom into dados with glue and screws at all 4 edges, using 1/4-inch materials matching the sides and backs.
- e. At drawers over 30 inches wide, provide 1/2-inch bottoms.
- f. Install 2-drawer guides for each drawer with positive closing and stop device to prevent inadvertent removal.
- g. Drawer boxes to be full height of drawer opening.
- h. Attach drawer front to subfront with #8 x 1-inch pan head wood screws (P.H.W.S.)
- i. Provide closing stops at the rear of both drawer sides, unless stops are built into the slides to prevent the drawer front from impacting the cabinet body.

2. Finishing:

- a. Drawer Front: Vertical grade high-pressure laminate (HPL).
- b. Interior Face of Drawer Front: Cabinet liner.
- c. Band all 4 edges of drawer front with specified banding material.
- d. Provide TFM panel with melamine finish on both faces, for subfront, sides, back and bottom.

C. Doors:

1. Fabrication:

- a. Panel: 3/4-inch thick MDF.
- b. Hang face-mounted over cabinet, pairs parallel with proper clearance at pull edges. Install hardware.
- c. Clearance Tolerances: Develop 1/8 inch maximum reveals.

2. Finishing:

- a. Exposed Exterior Face: Specified HPL.
 - 1) Where wood grain pattern is selected, provide pairs of doors with book-match wood grain patterns.
- b. Exposed Interior Face: Cabinet liner.
- c. Band all 4 edges of doors with specified banding material.

D. Shelves:

1. Fabrication - General:

- a. Shelving to be adjustable on 1-1/4 inch centers supported by 4 adjustable shelf clips.

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- b. Loading capacity to be minimum 50 pounds per square foot, not to exceed 200 pounds on any shelf.
 - c. Shelving shall match the interior depth of the cabinet box.
 - d. Band all leading edges with edge banding material as specified.
2. Shelving less than 24 inches: 3/4-inch MDF.
 - a. Finish: Melamine, both sides.
3. Shelving 24 to 30 inches: 1-inch MDF.
 - a. Finish: Melamine, both sides.
4. Shelving Greater than 30 inches, up to 36 inches: 1-inch, MDF.
 - a. Finish: Vertical grade HPL, both sides, applied with rigid glue line process.
5. Shelving Greater than 36 inches, up to 48 inches: 1-inch plywood.
 - a. Finish: Vertical grade HPL, both sides, applied with rigid glue line process. Contact adhesive is not permitted.

E. Scribes and Filler Panels:

1. Provide matching scribes and filler panels, and scribe all cabinets to abutting walls, partitions and ceilings.
2. Scribes shall not exceed 1-1/2 inches wide.
3. Scribe to be covered top and bottom.
4. At locations where casework wraps inside corners, provide top and bottom filler panels where voids occur.

F. Cabinet Bases:

1. If casework manufacturer chooses to use cabinet bases, they shall be 4 inches standard height.
2. Fabricate completely out of 3/4-inch plywood in continuous lengths to insure straight and level installation of cabinet bodies. MDF is not acceptable for use at bases.
3. Freestanding cabinets shall have cabinet ends running directly to the floor.
4. Anchorage fasteners to be neatly installed through the back and anchor strip at the top and bottom, and middle at tall cabinets.

2.9 COORDINATION WITH APPLIANCES

- A. Contractor shall have casework manufacturer review all locations where appliances are to be installed and coordinate dimensions to ensure the correct size openings are provided.
 1. Shop drawings shall clearly indicate locations and opening dimensions.
 2. Where appliances are not in contract, shop drawings shall request confirmation of critical dimensions.
- B. Adjustments that need to be made to the casework due to appliances not fitting correctly are to be done at no additional cost to the Project.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installing casework, examine and verify that the installed work of all other trades is complete to the point where this work may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. Review in job conditions, installation requirements, and quality of completed substrate for compliance with Architect's expectations related to floor flatness for installation of casework.
- D. In the event of discrepancy, immediately notify the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PREPARATION

- A. Take all necessary measurements in the field to ensure proper dimensions for cabinets prior to fabrication.
- B. Coordinate with other trades whose work adjoins, combines, or aligns with casework.
- C. Where substrate is not in compliance with Architect's expectations related to floor flatness for installation of casework, and where excessive shimming to meet these expectations would be required, level substrate using latex-modified, portland cement based or blended hydraulic-cement-based formulation as specified in Section 03 5416, Hydraulic Cement Underlayment.

3.3 INSTALLATION

- A. Install all work in conformance with the referenced NAAWS document.
- B. Supervision: Installation work shall be under direct supervision of representative of manufacturer of the casework.
- C. Set work level, square and in true alignment. Cabinetwork shall fit to walls and upon completion of installation shall show no marks, indentations or other defects. Furnish scribes, filler panels, trim and molding required for finished installation. When set, each individual cabinet shall be capable of withstanding, without movement, a force of 200 pounds applied in any direction.
- D. Cabinet work shall be installed as required so that the height from finish floor to top of counter, and sink rim where occurs, does not exceed the specified height at any location along the countertop after installation.
- E. Method of attachment, including the type, size, frequency and/or spacing of anchoring devices and fasteners shall comply to NAAWS minimum requirements or be as indicated on the Drawings or as specified, whichever is more restrictive.
- F. Doors, drawers and fixtures shall operate correctly and smoothly.

MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

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- G. Furnish miscellaneous metal support and bracing required for installation. If necessary, deliver these items to other trades responsible for installation into adjacent work and designate exact location for their installation.
- H. Provide specified seismic restraining, adjustable shelf supports at all adjustable shelves to prevent shelf from sliding out of cabinets with or without doors.

3.4 ADJUSTING AND CLEANING

- A. Prior to final inspection and acceptance by the Architect, completely check each installed item and adjust for proper operation.
- B. Remove all fingerprints, smudges and the like from casework; vacuum clean drawers and interiors of dust, dirt and sawdust.

3.5 PROTECTION

- A. Protect work and materials of this Section prior to and during installation and protect the installed work and materials of other trades. Adjust all moving or operating parts to function smoothly and correctly.
- 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.

END OF SECTION

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Last Updated: November 1, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plastic laminate faced counters and splashes.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 07 9200, Joint Sealants.
- D. Section 12 3216, Manufactured Plastic-Laminate-Clad Casework; casework to receive countertops.
- E. Division 26, Electrical, for electrical outlets and fittings built into countertops.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. American National Standards Institute (ANSI):
 - 1. A161.2: Decorative Laminate Countertops, Performance Standards for Fabricated High Pressure.
 - 2. A208.1: Particleboard.
 - 3. A208.2: Medium Density Fiberboard (MDF) for Interior Applications.
- D. International Organization for Standardization (ISO):
 - 1. 4586-2: "High-pressure decorative laminates (HPL, HPDL) - Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties."
- E. Woodwork Institute (WI): North American Architectural Woodwork Standards (NAAWS) published jointly by WI and the Architectural Woodwork Manufacturers of Canada (AWMAC).

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1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: Prepare for each countertop in accordance with Section 1 Article entitled "Submittals" of the referenced NAAWS document.
 - 1. Show items interfacing with countertops including relationship to supporting casework.
 - 2. Identify materials to be used.
 - 3. Shop drawings for countertops may be submitted as part of shop drawings prepared and submitted under Section 12 3216, Manufactured Plastic-Laminate-Clad Casework.
- B. Samples: 8 by 10-inch piece of selected pattern and color of plastic laminate.

1.6 INFORMATIONAL SUBMITTALS

- A. Before delivery of countertops to jobsite, submit a WI "Certified Compliance Certificate" listing the items certified, the applicable NAAWS Grade, and whether installation is included.
- B. Sustainable Design:
 - 1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 - 2. The following information shall be provided:
 - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
 - b. Composite Wood: Evidence of compliance that products meet formaldehyde limits of current CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.
- C. Qualification Data: For fabricator.

1.7 CLOSEOUT SUBMITTALS

- A. Guarantee: Submit extended Contractor guarantee.

1.8 QUALITY ASSURANCE

- A. Fabricator Qualifications: Active member of WI. Other fabricators will be considered for approval upon submission of at least 5 years of verifiable evidence of experience in successful completion of work similar to work of this Project. This provision does not waive compliance with specified WI certification.
- B. Standard for Materials and Workmanship:
 - 1. Comply with the applicable requirements of Section 11 - Countertops of the "North American Architectural Woodwork Standards (NAAWS)" published jointly by WI and AWMAC. (hereinafter referred to as "woodworking standard").
 - 2. Where Contract Documents indicate requirements that conflict with or augment the woodworking standard, comply with the conflicting or augmenting requirements.
- C. 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.
- D. Proof of compliance with the specified NAAWS Grade assembly and installation shall be provided by the following WI Quality Control Program:
 - 1. WI Certified Compliance Program:
 - a. Countertops and the installation thereof for this Project shall be certified by fabricator for compliance to the Contract Documents.
 - b. WI licensees shall issue a Certified Compliance Certificate indicating the countertop products being furnished and certifying that these products and their installation will fully meet all the requirement of the WI Grade specified. Certificate shall be submitted prior to delivery of casework to the jobsite.
 - c. Non-licensees of the WI shall arrange to have a WI Inspector inspect the countertops after completion of fabrication and installation and furnish a Certified Compliance Certificate. Contractor shall be responsible for all costs associated with corrections to fabricated or installed work as required to secure the WI Certified Compliance Certificate.
 - d. Countertops and/or installation determined to be non-compliant by WI and not corrected will be rejected.
 - e. Each countertop shall bear the WI Certified Compliance Label.
 - f. Fees charged by WI to either WI licensee or non-licensee are the responsibility of the Contractor.
 - g. At completion of installation the Contractor shall provide a Woodwork Institute Certified Certificate from its installer indicating the products installed, and certifying that the installation of these products fully meets the requirements of the Grade or Grades specified. Issuance of the WI Certified Compliance Certificate is a prerequisite of the Architect's final acceptance.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver products until wet work, painting, and similar operations in storage and installation areas that could damage or soil work have been completed.

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- B. Protect products during transit, delivery, storage, and handling so as to prevent damage, soiling, and deterioration.
- C. Store countertops only in areas where ambient conditions required can be and are maintained.
- D. Coordinate delivery with fabrication and installation of casework.

1.10 FIELD CONDITIONS

- A. Products shall be available at project when required for installation so as not to delay job progress. Contractor shall have its installer for these products cooperate with installers performing work under other Sections involved to effect proper installation.
- B. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- C. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on shop drawings.

1.11 GUARANTEE

- A. Contractor: In addition to its standard Guarantee under the Contract, furnish Owner a special extended written 5-year guarantee, cosigned by installer, agreeing to repair or replace plastic-laminate-clad countertops that fail to perform as required within guarantee period as a result of failure of materials or installation workmanship at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:
 - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
 - 2. Composite wood products must meet current formaldehyde emission limits of CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.

2.2 PANEL MATERIALS

- A. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 155, formaldehyde free. 3/4 inch thick unless otherwise indicated.
 - 1. Typical Locations: Meeting grade MR30 moisture resistance; "Medite II," by Roseburg, or equal.

2. At Sinks and Adjoining Countertops on Same Wall: Meeting grade MR50 moisture resistance; "Medex," by Roseburg, or equal.

B. Particleboard: Not permitted.

2.3 LAMINATE MATERIALS

A. High-Pressure Plastic Laminate: Conforming to ISO 4586-2.

B. Grades:

1. Horizontal Surfaces and Backsplash: ISO 10/HGS; horizontal, general purpose.
2. Postforming: ISO 12/HGP; horizontal, general purpose, postformable.
3. Backing Sheet: ISO 91/BKL; backer, light duty.

C. Manufacturers: Formica, Wilsonart, Arborite, Pionite, Nevamar, or equal.

D. Colors, and Patterns: As selected by Architect from manufacturer/suppliers' full product color range.

1. There will be no additional cost allowance for premium color selections, or for selection of different colors for different rooms up to a maximum 6 colors.

2.4 ACCESSORIES

A. Edge Treatment: Same as laminate cladding on horizontal surfaces.

B. Edge Banding:

1. 3-mm thick PVC: Solid, high impact, purified, color-thru, acid resistant, pre-laminated primed edging, machine-applied with hot melt adhesives, automatically trimmed, inside/outside length-radiused for uniform appearance, buffed and corner-radiused for consistent design.
2. Color: As selected by architect from manufacturer's full range of standard colors.

C. Fasteners: Type and size as required.

D. Adhesives: VOC compliant and passing NAAWS "Heat Resistance Test.". Do not use adhesives that contain urea formaldehyde.

2.5 FABRICATION

A. General:

1. Obtain field measurements, and verify dimensions before fabricating work.
2. Comply with NAAWS Custom Grade requirements and ANSI A161.2.

B. Core Material: Specified MDF.

C. Fabricate to dimensions, profiles, and details shown.

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- D. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of core material laminated to top.
- E. Provide specified backing sheet at configurations and installation conditions recommended in the woodworking standard.
- F. Countertops with Sinks: Provide no-drip roll-form edge, and 4-inch high coved backsplashes and returns for full length of counter, including counters that wrap around corners, and where shown. Inside corners at backsplashes shall be coved.
- G. All other Countertops: Provide straight edge with 3mm edge banding.
- H. Unless otherwise shown, round projecting or outside corners with 3/4-inch minimum radius or clip 45-degree angle corner.
- I. Provide joints only where maximum available lengths or countertop configuration requires a joint and where interfacing with existing. Where joints are required, balance and center. Make joints neat, flush and watertight.
- J. To greatest extent possible, complete fabrication and assembly before shipment to site.
 - 1. Disassemble components only as necessary for shipment and installation.
 - 2. Where necessary for fitting at site, provide extra borders and edges so as to allow scribing and trimming to fit.
- K. Precut openings for applied fixtures and fitting, where possible. Field cuts shall be performed by the fabricator.
- L. Conceal all fasteners.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that backing has been installed at appropriate locations for anchorage.
- B. Examine shop-fabricated work for completion. Complete work as required.

3.2 INSTALLATION

- A. Install countertops in accordance with Section 11 of the NAAWS and requirements shown on the Drawings.
- B. Install countertops and backsplashes with concealed fastenings, securely attaching to cabinet bases or countertop braces / brackets at 36 inches on center maximum. Scribe neatly to walls or other adjoining surfaces.
- C. Make joints neatly, with uniform appearance.
- D. Install work plumb, level, true, and straight, with no distortions. Install with no variation in flushness of adjoining surfaces.

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- E. Countertops shall be installed as required so that the height from finish floor to top of counter, and sink rim where occurs, does not exceed the specified height at any location along the countertop after installation.
- F. Shim as required, using concealed shims.
- G. Sealant: Install sealant as specified in Section 07 9200, Joint Sealants, to close small unavoidable gaps between counter and abutting surfaces, and at sinks. Sealant shall not be a substitute for tightly scribed work.
- H. Install, at no additional charge, extra stock grommets where directed by Owner following completion of countertop installation.

END OF SECTION

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Last Updated: November 12, 2021

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Chain link fences
 - 2. Gates and gate hardware.
 - 3. Privacy slats.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 32 1600, Site Concrete.
- D. Section 08 7100, Door Hardware, for padlocks.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- C. Chain Link Fence Manufacturers' Institute (CLFMI):
 - 1. Products Manual.
- D. ASTM International (ASTM):
 - 1. A153: Zinc Coating (Hot Dip) on Iron and Steel Products.
 - 2. A392: Zinc Coated Steel Chain Link Fence Fabric.
 - 3. A653/A653M: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 4. A780/A 780M: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 - 5. C33/C33M: Standard Specification for Concrete Aggregates.
 - 6. C94: Ready-mixed Concrete.
 - 7. C150/C150M: Standard Specification for Portland Cement.
 - 8. F668: Poly Vinyl Chloride (PVC) Coated Steel Chain Link Fence Fabric.
 - 9. F934: Standard Colors for Poly Vinyl Chloride (PVC) Coated Chain Link.

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10. F969: Standard Practice for Construction of Chain-Link Tennis Court Fence.
11. F1083: Pipe, Steel, Hot-Dipped Zinc Coated (Galvanized) Welded, for Fence Structures.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:

1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit showing all parts, connections and anchorages, adjacent materials, fully dimensioned and noted. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage and schedule of components.
- B. Products 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. Samples:
1. Chain-link fabric, approximately 12 inches square, in selected color.
 2. Hardware and fittings if requested by Architect.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample of manufacturer's warranty.
- B. Sustainable Design:
1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
 2. The following information shall be provided:
 - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.

1.8 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. 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 Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.9 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.

1.10 FIELD CONDITIONS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Industry Standards: Materials and installation shall conform to the requirements of the Chain Link Fence Manufacturers Institute (CLFMI) "Product Manual."
- B. Regulatory Requirements: Pedestrian gates and related hardware shall comply with applicable codes, including provisions for accessibility required by CBC and the Americans with Disabilities Act "Designs for Accessible Design." Comply with the most stringent.
- C. Use new components **[,except existing fence indicated to be relocated,]** free from defects affecting service and appearance.
- D. Sizes specified or shown are minimum.
- E. Provide ferrous material except as otherwise indicated or specified.
- F. Sustainable Design:
 - 1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

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2.2 WORKMANSHIP

- A. Galvanizing: Hot dip galvanize ferrous materials after fabrication. Repair zinc coating damaged in shop or during field erection by re-coating with hot repair compound, Re Galv, Galvalloy, Galveweld-alloy, or equal, applied in accord with manufacturer's recommendations.

2.3 MATERIALS

- A. Galvanized Fabric: Steel wire with no less than 1.20 ounce of zinc coating per square foot (Class 1) of surface area and complying with ASTM A 392.

- 1. Typical:
 - a. Wire Diameter: 9 gage, coated size.
 - b. Mesh Opening: 2 inches.
- 2. Edges: Knuckle fabric at bottom and at top selvage.
- 3. Fabric widths shall be one piece.

- B. Pre-Woven Privacy Slats: Extruded high density polyethylene (HDPE), color pigments, and ultra violet (UV) inhibitors uniquely styled for mechanical insertion into chain link wire during weaving process; PDS Fence Products by Pexco, 800-755-7528, or equal.

- 1. Width: 3-1/2 inches and 5 inches.
- 2. Color: As selected by Architect.

- C. Standard Privacy Slats: Extruded high density polyethylene (HDPE), color pigments, and ultra violet (UV) inhibitors; PDS "Bottom Lock" slats by Pexco, 800-755-7528, or equal.

- 1. Size: As recommended by manufacturer for mesh opening size.
- 2. Color: As selected by Architect from manufacturer's standard colors. Allow up to 8 options minimum.
- 3. Slats shall provide 95 percent privacy.

- D. Round Steel Pipe Fence Framework:

- 1. Round steel pipe and rail, Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/sq. ft (550 g/sq. m) hot dip galvanized zinc exterior and 1.8 oz/sq. ft (550 g/sq. m) hot dip galvanized zinc interior coating.
 - a. Regular Grade: Minimum steel yield strength 30,000 psi (205 MPa)
 - b. High Strength Grade: Minimum yield strength 50,000 psi (344 MPa)

- E. Line Posts:

- 1. Without Slats or Windscreen: Regular Grade.
 - a. To 8'-0" High Maximum: 2-3/8 inch outside diameter pipe at 3.65 pounds per linear foot.
- 2. With Slats or Windscreen: High Strength Grade.

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- a. To 8'-0" High Maximum: 4 1/2 inch outside diameter pipe at 9.11 pounds per linear foot.
- F. End, Corner and Pull Posts: End, corner and pull posts shall also comply with gate post requirements, where occurs.
 - 1. Without Slats or Windscreen: Regular Strength.
 - a. To 8'-0" High Maximum: 2-7/8 inch outside diameter pipe at 5.79 pounds per linear foot.
 - 2. With Slats or Windscreen: High Strength Grade.
 - a. To 8'-0" High Maximum: 4-1/2 inch outside diameter pipe at 10.79 pounds per linear foot.
- G. Gate Posts, Single Leaf: Gate posts shall also comply with End, Corner and Pull Post requirements.
 - 1. To 6 Feet Wide: 2-7/8 inch outside diameter pipe at 5.79 pounds per linear foot.
 - 2. 6 Feet to 12 Feet Wide: 4-1/2 inch outside diameter pipe at 10.79 pounds per linear foot.
- H. Post caps: Cast or malleable iron ball or acorn shape; with opening for top rail.
- I. Top Rail and Braces: 1-5/8" outside diameter pipe at 2.27 pounds per linear foot., or 1-5/8 inch x 1-1/4 inch roll formed section, 14 gauge.
 - 1. Brace Assembly:
 - a. Equally spaced between top rail and bottom fabric selvage and run from end, gate, or corner post to first line posts with suitable malleable iron fittings.
 - b. Truss from line post to end, gate, or corner post with 3/8 inch round rod.
- J. Tension Wire: 7 gauge coil spring wire.
- K. Wire Ties: Specified spacing is minimum. Manufacturer's standard procedure may require more ties.
 - 1. Tying Fabric to Posts: 9 gauge steel wire spaced 12 inches on center.
 - 2. Tying Fabric to Rails and Braces: 9 gauge steel wire spaced 24 inches on center.
- L. Bands: 14 gauge x 1 inch wide steel spaced 15 inches on center. for securing stretcher bars to end and gate posts.
 - 1. Bands may be used in conjunction with special fitting for securing rails to end and gate posts.
 - 2. Chamfer to ease projecting edges of bands.

2.4 GATES

- A. Frames:

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1. Gate Leaves to 6 Feet Wide: 1-5/8 inch outside diameter pipe at 2.27 pounds per linear foot.
 2. Gate Leaves Over 6 Feet Wide: 2 inch outside diameter pipe at 2.72 pounds per linear foot.
 3. Provide additional horizontal and vertical pipe or tube as necessary to assure proper gate operation and attachment of fabric and hardware.
- B. Diagonal Bracing: Provide adjustable length 3/8 inch truss rods on non-welded gate frames and welded gate frames where corner rigidity is insufficient to insure no sag.
- C. Fabric: As specified for fence.
- D. Gate Assembly:
1. Weld or assemble gate frame with malleable or pressed steel fittings and rivets to provide rigid connections.
 2. Install fabric with stretcher bars at vertical edges, which may also be used at top and bottom edges.
 3. Securely attach stretcher bars and fabric to frame on all sides at 15 inches on center.
 4. Attach hardware with rivets or by other means which will provide security against removal.
- E. Gate Hardware:
1. General: Hardware at disabled accessible gates shall meet accessibility, including mounting, of the ADA and CBC. Comply with the most stringent.
 2. Hinges: Malleable iron, pressed or forged steel, non-liftoff type, easy noiseless operation and long wear, offset to permit 180 degree gate opening.
 - a. Provide 1-1/2 pair hinges for each leaf over 6 feet nominal height.
 - b. Ball and socket hinges not acceptable.
 3. Fork Latch: Malleable iron, drop fork latch which permits operation of the gate from either side, with padlock eye provided as integral part of latch.
 4. Kick Plates: 10 inches tall x width of gate x 14 gauge minimum, smooth uninterrupted surfaced, galvanized steel.
 - a. Mount on the bottom edge of gate at the push side. Mount on both sides at two-way swing gates.
 - b. Bottom edge of plate shall be not more than 3 inches above the top of the walk.
 - c. Plate shall be welded to the fence frame and shall allow the gate to be opened by a wheelchair footrest without creating a trap or hazardous condition.
 - d. Provide at pedestrian gates that are within the disabled accessible path of travel
 5. Gate Stop and Holder: Malleable iron.
 - a. Stop shall automatically engages gate frame and holds it in open position.
 - b. Provide at vehicle gates.

6. Double Gates: Provide cane bolt and ground set keeper with locking device and padlock eyes designed as integral part of latch, requiring one padlock for locking both leaves.

2.5 ADDITIONAL MATERIALS AND COMPONENTS

- A. Galvanizing Repair: Zinc coating damaged in shop or during field erection shall be by re-coated using a hot repair compound; "Regalv" repair stick by Rotometals, San Leandro, CA, or equal, applied in accordance with manufacturer's recommendations.
- B. Concrete:
 1. Materials:
 - a. Portland cement, ASTM C 150.
 - b. Aggregate: ASTM C33.
 - c. Water: Potable and free from substances harmful to concrete.
 2. Mix materials to obtain low slump concrete with 28 day compressive strength of 2,500 psi.
 - a. Maximum Size Aggregate: 1-1/2 inch.
 - b. Re-tempering not permitted.

2.6 RELOCATED EXISTING CHAIN LINK FENCING

- A. Inspect existing chain link fencing fabric indicated to be removed and re-installed in new work.
- B. Supervise removal and re-installation.
- C. Provide new material, including fittings and hardware, as necessary for re-installation, complete as specified for new chain link fencing.
- D. Existing fencing materials indicated to be removed or relocated and which are not re-installed in new work, including footing, will become property of the Contractor and shall be removed from the site.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
 1. Execute work in accord with best trade practice for industrial fence installations.
 2. Make welds neat and secure, grind off excess exposed metal.
 3. Securely set posts plumb in alignment at proper depth and height, and rigid bracing where needed; install fabric under tension and securely tie to posts, rails and braces.
 4. Gates shall move freely without sag.
- B. Setting Posts:

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1. General: Space posts as indicated but not more than 10 feet on center.
2. Pour and tamp concrete leaving no voids.
 - a. Check posts for vertical and top alignment and hold in position.
 - b. Dome top of concrete and trowel smooth to shed water away from post.
 - c. Align posts in footings as follows:
3. Without Slats or Windscreen: Footings for End, corner and pull posts shall also comply with gate post requirements, where occurs.
 - a. Line Posts to 8'-0" High Maximum: 1'-0" diameter, 3'-3" minimum embedment.
 - b. End, Corner and Pull Posts to 8'-0" High Maximum: 1'-0" diameter, 4'-3" minimum embedment.
4. With Slats or Windscreen:
 - a. Line Posts to 8'-0" High Maximum: 1'-6" diameter, 5'-3" minimum embedment.
 - b. End, Corner and Pull Posts to 8'-0" High Maximum: 1'-6" diameter, 5'-6" minimum embedment.
5. Single Leaf Gates: Footings for gate posts shall also comply with End, Corner and Pull Post requirements.
 - a. To 6 Feet Wide: 12 inch diameter, 36 inch embedment.
 - b. 6'-1" wide to 12 Feet Wide: 16 inch diameter, 48 inch minimum embedment.
- C. Where posts occur adjacent to structures or other work where concrete foundations may conflict with post footing, block out to allow post installation or use off-set post. Hold post 4 inches clear from face of structure.
- D. Tension Wire: Provide wire at bottom of fence fabric. Install taut, tying to each post with 6 gauge wire.
- E. Fabric: Leave about 1-1/2 inches between ground and bottom barbs.
 1. Pull fabric taut and tie to posts, rails and tension wires.
 2. Install fabric on security side of fence.
 3. Fabric shall remain under tension after pulling force is released.
- F. Gates:
 1. Install gates plumb, level and secure, with full swing or slide without interference.
 2. Install ground set items in substantial concrete mass for adequate anchorage.
- G. Tie Wires:
 1. Install with one tight turn to hold fabric firmly to frame.
 2. Bend ends of wire inward to prevent hazard to persons or apparel.
- H. Fasteners:

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1. Install nuts for tension band and hardware bolts on side of fence opposite fabric side.
2. Spoil ends of bolts to prevent removal of nuts.

3.2 ADJUSTING

- A. Repair exposed zinc coatings damaged in shop or during field erection using specified repair system and in compliance with ASTM A 780,
- B. Adjust gated hardware for smooth operation and lubricate where necessary.

END OF SECTION

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